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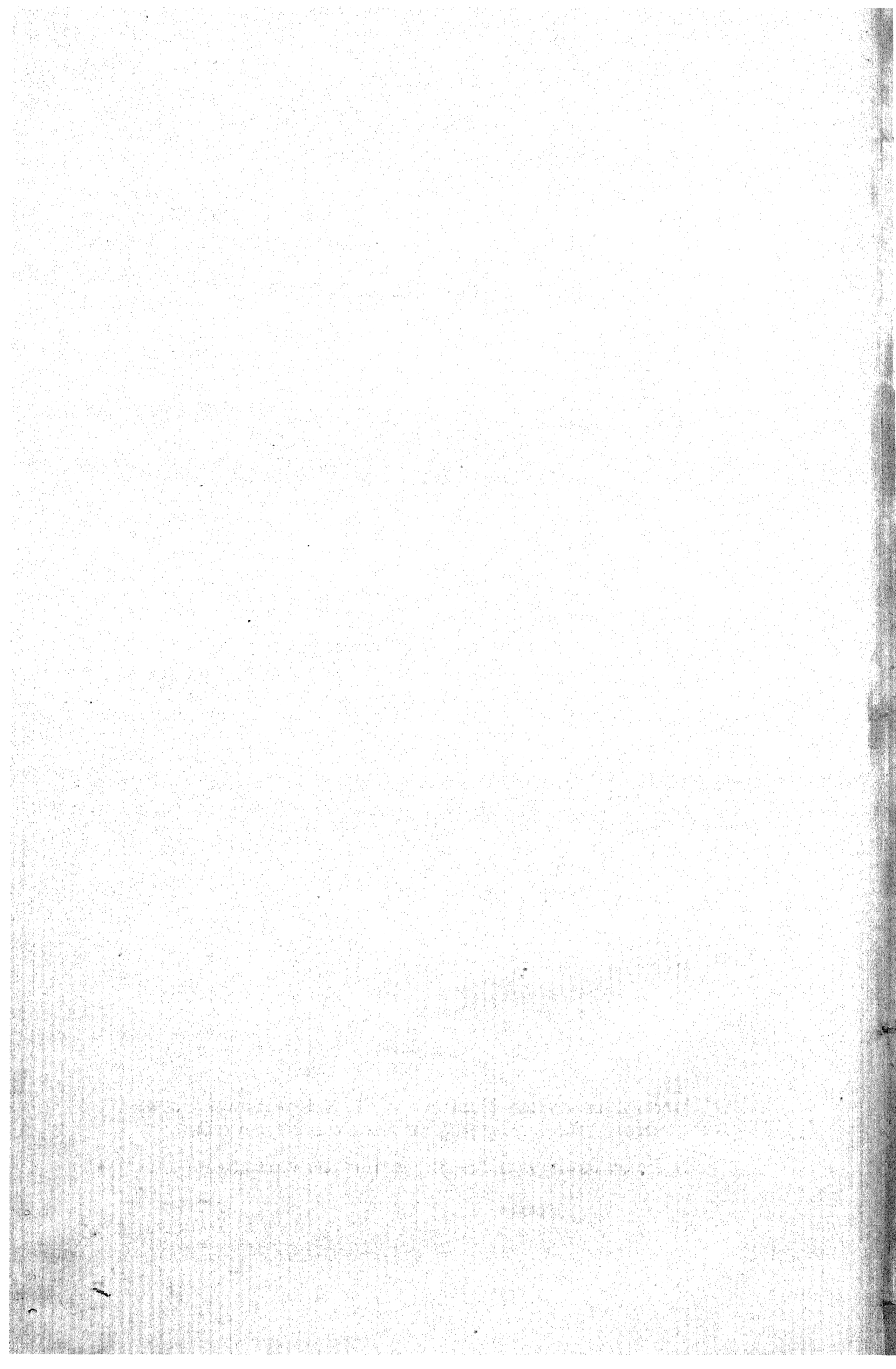
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- i. On the Arterial System of the Lizard *Varanus bengalensis* (Daud.), with Notes on *Uromastix* and *Hemidactylus*.

By GOBIND SINGH THAPAR, M.Sc., F.R.M.S.,  
Zoological Department, The University, Lucknow.

The present paper is a continuation of my work on the vascular system of *Varanus bengalensis*, the account of the venous system having appeared in the "Proceedings of the Zoological Society of London" for 1921.

The foundation of our knowledge of the arterial system of Lacertilia was laid by Corti in 1847, in his work "De Systemate Vasorum Psammosauri grisea." I have not seen his work in original but it has been referred to by several subsequent workers. Rathke (12) described the aortic roots of about 55 species of Lacertilia, including some of the genus *Varanus*; and the same author (13) and also Hochstetter (7) have described the main arteries of the gut in a number of species. Most of these observations are reproduced in "Broun's Thierreich" by Hoffmann, in his account of the Reptilia (vol. VI, Abt. ii, pp. 990, 991). Beddard (1, 3, 4) has also made comparative studies of the vascular system of a number of Lacertilia.

These descriptions, however, do not completely apply to the present species, *Varanus bengalensis*, in which there are some very conspicuous features not so far described in any other lizard. There is, therefore, justification for the following record of the results of my investigation.

Besides the ordinary dissections and injections, I have

tried the plan of causing engorgement of some portions of the arterial system by ligaturing other outlets from the heart while the heart was still beating; in this way the course of the vessels could easily be followed. Dissections of fresh specimens of *Uromastix* and *Hemidactylus flaviviridis* were also made for comparison, and I have added brief notes on these also. My grateful acknowledgments are due to my professor, Colonel J. Stephenson, D.Sc., now at the University of Edinburgh, for his kind suggestions and also for correcting the manuscript of my paper.

### 1. THE ARTERIAL ARCHES. (Fig. 1.)

There are three arterial trunks arising from the ventricle. The cavity of the latter is incompletely divided by a ridge-like partition, which runs obliquely from the left latero-ventral wall, and tends to divide the ventricle at the time of its contraction into two unequal chambers; of these the right is the larger, and more dorsal in position.

Arising from the left side of the ridge is the *Pulmonary arch*, ventral in position and curving over to divide into two branches, the pulmonary arteries, one for each lung.

The right chamber gives origin to two vessels, the right and left roots of the aorta. These roots, the systemic arches, cross each other at their origin, so that the left systemic arch arises from the heart on the right side of the right arch. Both these arches arise dorsally to the pulmonary arch and twist round to become ventral to it; they then curve round the oesophagus, thus becoming dorsal in position, and finally run backwards to unite with each other below the vertebral column and behind the level of the heart.

I. The *Right Systemic*, or better the *Systemico-carotid arch*. Before this arch curves round to occupy the dorsal position it sends off a branch, the *Innominate* (c. c.).

(A) The *Innominate* artery (*carotis primaria* of Rathke) immediately after its origin gives off a narrow branch, the common epigastric (ep. c.), which runs backwards just ventral to the heart. The innominate itself, of some length, runs forwards towards the head, and about half an inch in front of the bifurcation of the trachea divides into the right and left carotid arteries, each of which follows its usual course forwards along the neck.

The *Common Epigastric* artery, the origin of which is described above, divides into two near the base of the auricles: these, the *right* and *left Epigastric* arteries, are very fine vessels, and in order to see their exact course I had to use freshly killed specimens in which the heart was still beating vigorously; the right systemic arch was then ligatured a little beyond the origin of the innominate artery, and the innominate also was ligatured near the bifurcation of the

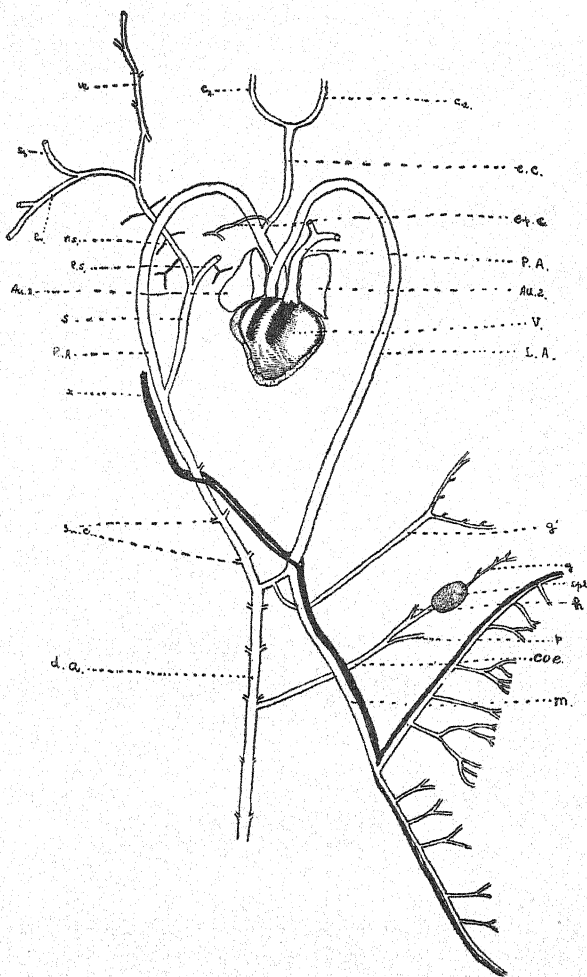


FIG. 1.

The Heart and main Arteries in *Varanus bengalensis*. Au. 1 and 2, r. and l. auricles; br., brachial; c<sub>1</sub> and c<sub>2</sub>, r. and l. carotids; c. c., innominate (common carotid); coe., coeliac; d. a., dorsal aorta; ep. c., common epigastric; g., right gastric; g', left gastric; h., hepatic; in. c., intercostal; l. a., left systemic arch; m., mesenteric; p., pancreatic; p. a., pulmonary arch; r. a., right systemic arch; s., subclavian (dividing into r. s. and l. s., the r. and l. subclavians); sc., subscapular; spl., spleen; v., ventricle; ve., vertebral; x., ligament.

trachea, so that most of the blood which entered the right systemic arch was forced into the epigastrics; these arteries were thus distended and made conspicuous throughout their course. In this way the exact distribution of these vessels was traced. It is interesting to note that the two epigastric arteries are not symmetrical in their distribution.

(a) The *Right Epigastric* artery (Fig. 2, ep. a. 1). This vessel, on reaching the posterior border of the last sternal rib, divides into two. One of these branches (p.) runs forwards across the ribs to supply the inner sheet of the pectoral muscles in the ventral region. The other branch runs backwards along the outer (ventral) side of the epigastric vein, and ramifies over the body-wall; it also sends a branch to the fat body, over which it ramifies, probably anastomosing there with the posterior epigastric artery.

(b) The *Left Epigastric* artery (ep. a. 2) has the same course as has been described for the right, but it gives off an additional branch about an inch beyond its origin from the common vessel. This branch of the left epigastric divides into two:—(i) a *muscular* artery (m. c.), distributed to the body-wall; (ii) the *hepatic* artery (he.), which enters the liver at the anterior end of the median sulcus.

I may mention here that I have not been able to trace any vessel corresponding to the epigastric of *Varanus* in *Uromastix* and *Hemidactylus*. In vertebrates the epigastric is generally described as originating from the subclavian; the origin of an epigastric artery, supplying the liver, fat body, and body-wall, from the root of the common carotid is very peculiar; it is not found in any of the Lacertilia, and I am not aware of any similar vessel in any other vertebrate. Without going into the significance of this vessel, I may point out that it carries to the liver and body-wall a part of the pure blood meant for the supply of the brain.

Each carotid artery gives off the following branches in the neck:—

(i) The *Thyroid* artery, for the thyroid gland.

(ii) The *Oesophageal* artery (oe.) arising about an inch above the bifurcation and curving round to be distributed on the oesophagus.

(iii) The *Hyoidean* artery (h.) arises a little in front of the oesophageal, and runs to the muscles of the hyoid.

(iv) The *Lingual* artery (l.) goes to the tongue.

At the base of the skull each carotid artery divides into the usual cerebral and palatine branches. One notable feature in this part of the system is the entire absence of the Ductus caroticus (O'Donoghue, 10); this is present, however, in the other two lizards which I have investigated.

(B) The *Subclavian* artery (Fig. 1, s.) also arises from the right systemic arch, but after the latter has curved over

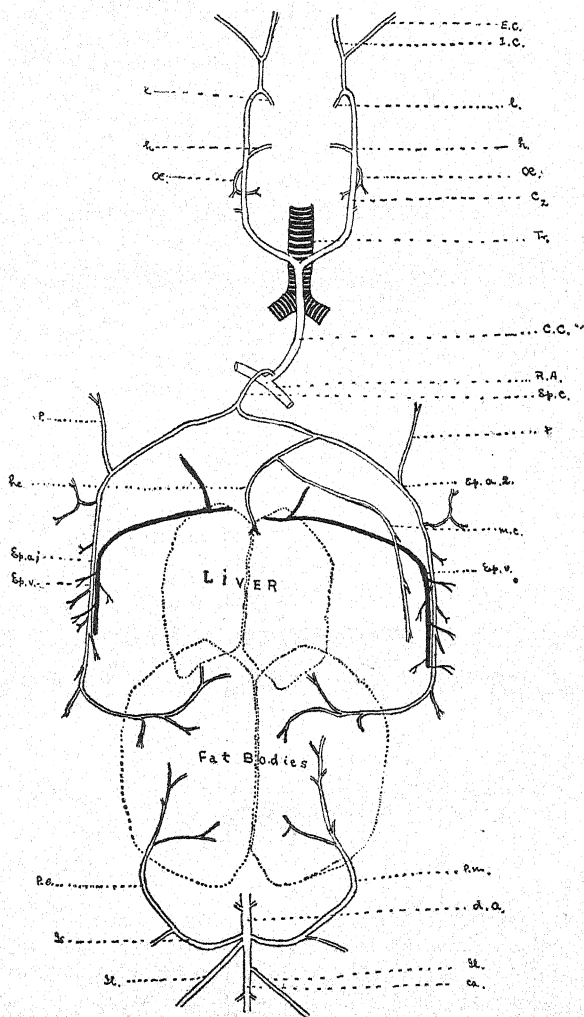


FIG. 2.

The Innominate and its branches in *Varanus bengalensis*. Ca., caudal; e. c., external carotid; ep. a. 1, ep. a. 2, right and left epigastrics; ep. v., epigastric vein; h., hyoidean; he., hepatic; i. c., internal carotid (cerebral); il., iliac; is., ischiadic; l., lingual; m. c., muscular; oe., oesophageal; p., artery to inner sheet of pectoral muscles; p. e., posterior epigastric; tr., trachea. Other letters as in Fig. 1.

to assume the dorsal position. This *common subclavian* artery divides into *right* and *left subclavians* (r. s., l. s.) which run on either side of the vertebral column. In *Hemidactylus* there are two independent subclavian arteries arising from the right systemic aorta. Near the base of the arm each subclavian divides into two, the vertebral and brachial arteries.

(i) The *Vertebral* artery (ve) runs forwards along the vertebral column and in its course gives off branches from each side alternately which enter the vertebral canal.

(ii) The *Brachial* artery (br.) goes to the arm, first giving off a branch, the *Subscapular* (sc.), to the scapula. The brachial has the usual course in the arm.

(C) The *Intercostal* arteries (in. c.). Three pairs of these arise from the right systemic arch; they supply the body-wall.

After giving off the subclavian artery, the right systemic arch is enclosed by a ligament of connective tissue (x.) arising by several elastic strands from the hypapophysis of the last cervical vertebra and centra of the first three thoracic vertebrae. This ligament first runs along the subclavian artery; then, after surrounding the right systemic arch, it crosses the middle line to enclose the left systemic similarly; finally, it runs towards the alimentary canal along the mesenteric artery, partly enclosing it, and ramifying in the same manner as the artery itself. The ligament is composed of very strong fibres of connective tissue, and may perhaps serve the purpose of keeping the aorta and intestine in position within the body-cavity during the active contortions of the body in rapid movement.

II. The *Left Systemic Arch* (Fig. 1, l. a.) becomes dorsal like the right, and runs along the inner ventral border of the left lung; but before its union with the right arch to form the dorsal aorta it gives off the following branches:—

(A) The *Mesenteric* artery (m.) arises from the left systemic arch about half an inch before the latter unites with the right arch; it is a fairly large vessel, and the left arch is noticeably diminished behind its origin. The mesenteric divides into two branches, which run side by side, enclosed by the longitudinal ligament described above, till they reach the gut; the two branches then separate, and distribute their blood to the different parts of the intestine. The ultimate distribution of the branches is indicated in fig. 3, along with the ramifications of the ligament.

(B) The *Left Gastric* artery (g') arises about midway between the origin of the mesenteric and the junction of the right and left arches. It is a small narrow vessel, running to the left of the stomach, over which it is distributed. This vessel was however absent in two cases; in one case it arose very close to the union of the two systemic arches. Wiedersheim (16) gives an instructive sketch to show the heart and

the arrangement of the several vessels in *Varanus*, but he does not indicate these visceral arteries, and, so far as I have been able to ascertain, they are not elsewhere described in *Varanus* in this way.

In the origin of the mesenteric artery from the left sys-

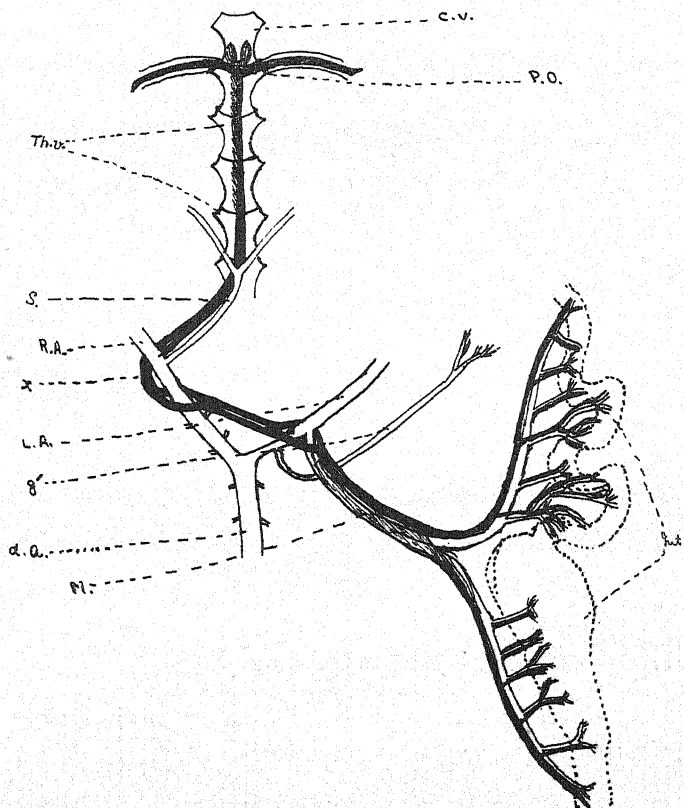


FIG. 3.

The Origin (p. o.) and Distribution of the Ligament and Mesenteric Artery in *Varanus bengalensis*. C. v., last cervical vertebra; g., gastric; int., intestine; th. v., thoracic vertebrae. Other letters as in Figs. 1, 2.

temic artery, we find in *Varanus* a condition which resembles that of the higher Reptilia, and which differs from that of other genera of Lacertilia, such as *Heloderma*, *Uromastix* and *Hemidactylus*, where all the visceral arteries arise from the dorsal aorta after the union of the two systemics.

## 2. THE DORSAL AORTA.

The Dorsal Aorta throws off a generous supply of offshoots to the body-wall and viscera.

I. There are fourteen pairs of *Dorso-lumbar* arteries arising from the dorsal aorta throughout its course as far as its termination in the tail as the caudal artery.

II. The *Coeliac* artery (Fig. 1, coe.) arises beyond the origin of the third pair of dorso-lumbars; after running for some distance in the mesentery it divides up into :—

- (i) The *Splenic* artery (spl.), for the spleen.
- (ii) The *Pancreatic* (p.), for the pancreas.
- (iii) The *right Gastric* (g.), for the right side of the stomach.
- (iv) *Hepatic* artery (h.), for the liver.

It would thus appear that the original Coeliaco-mesenteric of Amphibia is split up in *Varanus* into three branches, two of which, the mesenteric and the left gastric, retain their connection with the left systemic arch, while the third, the coeliac, comes off directly from the dorsal aorta. In *Heloderma*, *Uromastix*, and *Hemidactylus* a further splitting apart of the branches of the coeliaco-mesenteric takes place, so that we find in each of these genera as many as five independent visceral branches arising from the dorsal aorta to supply the different regions of the alimentary canal. Further, in *Varanus* the liver receives its arterial supply from two sources, the left epigastric and, as usual, the coeliac.

III. The *Ischiadic* artery (Fig. 2, is.). The last pair of segmental arteries are enlarged, and are called by Bronn the arteriae ischiadicae. Each arises a little in front of the iliac; each sends a branch to the body-wall, and itself runs forwards as the *posterior Epigastric* (p. e.) to the fat body, in which it appears to anastomose with the branches of the anterior epigastric. This anastomosis takes place also in *Sphenodon*, the only difference being that the anterior epigastric arises in the latter as a branch, not of the common carotid, but of the subclavian.

IV. The *Genital* and *Renal* arteries exhibit no peculiarities, and always arise in connection with the paired dorso-lumbars. The genitals are one pair only, the left arising in front of the right. The renals are three to five pairs.

V. The *Iliac* arteries (Fig. 2, il.) arise beyond the origin of the arteriae ischiadicae, and have the usual course. In one case the two iliacs arose from the dorsal aorta at different levels, the left a little in front of the right, and just at the origin of the left iliac arose the left ischiadic. In another case the left posterior epigastric arose directly from the left iliac, thus indicating the probable fusion of the ischiadic of this side with the iliac. The latter condition seems to be similar to what is found in the Urodeles.

The dorsal aorta, after giving off the iliac arteries, runs as the *caudal* artery (c.) in the tail. The first pair of its branches goes to the pelvis, succeeding ones to the muscle of the tail.

I have no observation on the existence of retia mirabilia in the caudal region of this lizard, but it is not likely that this thick-tailed lizard often parts with that extremity of its body. I have not met with any specimen in which the tail was regenerated to a greater extent than its minute tip.

The chief peculiarities of the arterial system of *Varanus bengalensis* are thus:—

(1) The origin of the epigastric arteries from the innominate; and their anastomosis with the posterior epigastrics, as in *Sphenodon*.

(2) The origin of a single subclavian of the dorsal type from the right systemic only.

(3) The independent origin of the mesenteric and the left gastric arteries from the left systemic arch, as in higher reptilia, before its union with the right.

(4) The double arterial supply to the liver, by means of the left epigastric and coeliac arteries.

(5) The enclosure of both systemic arches by a ligament which is attached behind to the alimentary canal along the ramifications of the mesenteric artery.

### 3. NOTES ON THE ARTERIAL SYSTEM OF *Uromastix hardwickii* (Gray) and *Hemidactylus* *flaviviridis* Rüppel.

The arterial system of *Uromastix hardwickii* (Fig. 4) is found to present certain remarkable differences from that of *Varanus*.

A ductus caroticus connects each carotid with the systemic arch of its side. A single subclavian is the only vessel which arises from the systemic arches before their union (s., Fig. 4). At the point where the coeliaco-mesenteric artery is usually given off (between the third and fourth dorso-lumbars) arises the *gastric* artery (g.), which ramifies over the right side of the stomach. The next two arteries for the alimentary canal arise one behind the other between the seventh and eighth pairs; the anterior of these two, the *posterior mesenteric* (p. m.), runs backwards to supply the colon and rectum; the other, the *coeliac* (coe.), divides into three branches:—

(a) The *splenic*, for the spleen (spl.).

(b) The *gastric*, for the left side of the stomach (g.).

(c) The *pancreo-hepatic*, which runs along the pancreas (pa.), sending branches to this organ as it proceeds, and

curving over the stomach to supply the liver as the *hepatic artery* (he.).

The next set of arteries for the alimentary canal, the *duodenal* and *intestinal*, arise between the eighth and ninth

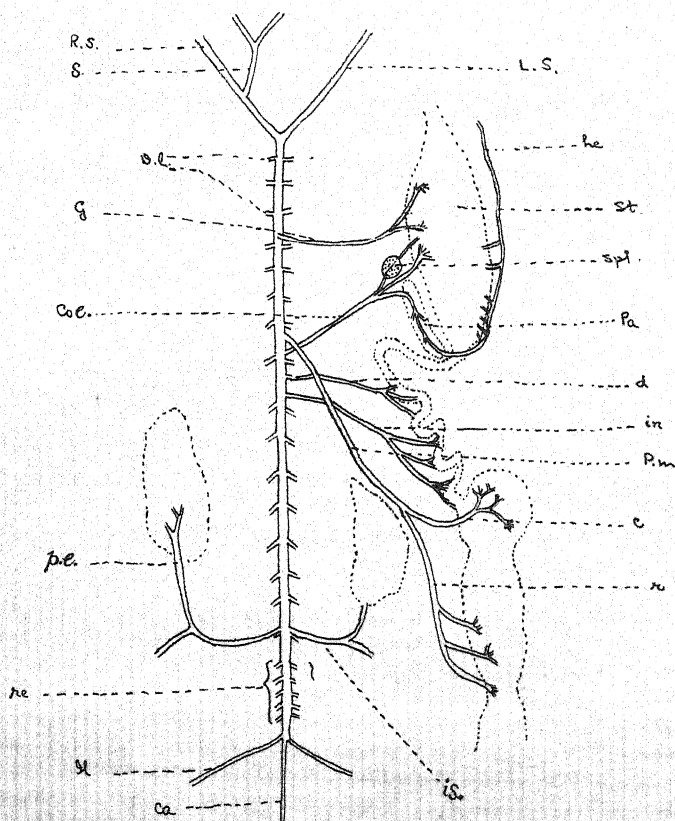


FIG. 4.

The main Arteries in the body region of *Uromastix hardwickii* with the Alimentary Canal pushed over to the left (visceral organs represented by dotted lines). C., colon; d., duodenal; d. l., dorso-lumbar; g., gastric; in., intestinal; pa., pancreas; p. m., posterior mesenteric; r., rectal; re., renal; st., stomach. Other letters as in Figs. 1-3.

dorso-lumbar. These (d. and in., Fig. 4) are the branches, here independent, of what in *Hemidactylus* is the anterior mesenteric artery.

Thus in *Uromastix hardwickii* all the main branches supplying the alimentary canal arise independently of one

another, there being no such combination as is found in *Varanus bengalensis*.

The *ischadic* arteries (is.) arise from the aorta behind the fifteenth pair of dorso-lumbar; each gives off a branch, the *posterior epigastric* (p. e.), which runs forwards to the body-wall, ultimately terminating in the fat body.

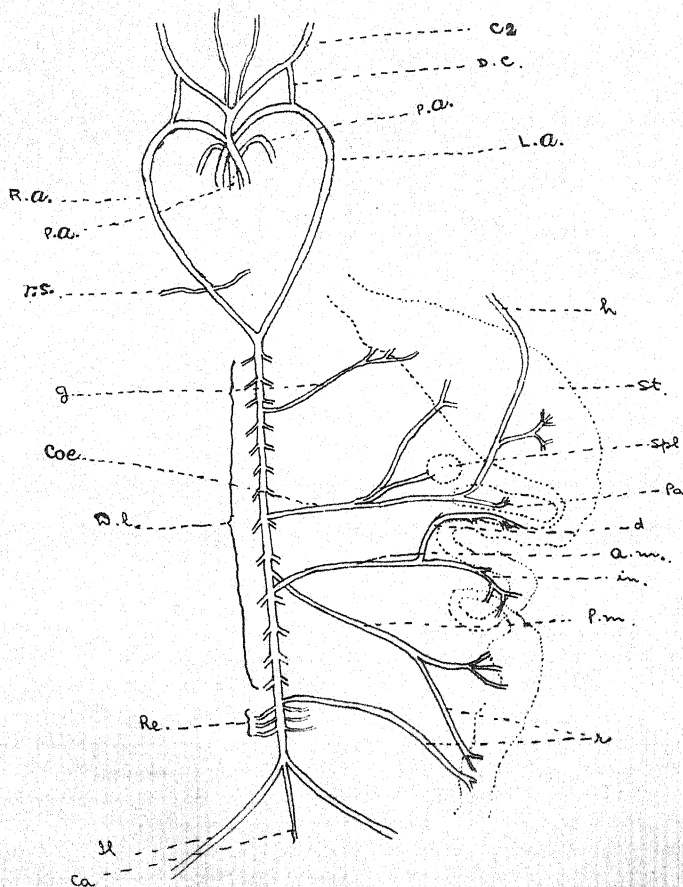


FIG. 5.

The Arterial System of *Hemidactylus flaviviridis*. D. c., ductus caroticus; a. m., anterior mesenteric artery. Other letters as in Figs. 1-4.

The *renal* arteries arise as three to four pairs behind the ischiadics; the dorsal aorta then runs back in the tail as the caudal artery.

The condition in *Hemidactylus flaviviridis* (Fig. 5) is largely

similar to that of *Uromastix*, so that it will suffice to enumerate the chief points of difference. They are :—

(1) The origin of the subclavians as two independent arteries from the right systemic arch, and not, as in *Varanus* and *Uromastix*, as a single vessel.

(2) The anterior and posterior mesenteric arteries arise close together, the posterior in front of the anterior, between the ninth and tenth pairs of dorso-lumbar. We have seen that in *Uromastix* the posterior mesenteric artery arises from the aorta further forwards, between the seventh and eighth pairs of dorso-lumbar.

(3) The presence of an independent rectal artery, in addition to the usual branch of the posterior mesenteric.

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## 2. On the Anatomy and Bionomics of the Red Cotton Bug, *Dysdercus cingulatus* (Fabr.).

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### INTRODUCTION.

The material for study was collected at Lahore and Pusa during the months of March to August of 1919 and 1920. Specimens were chloroformed or killed by immersing in 90% alcohol.

For studying the external features, 70% alcohol was used as a preservative. It had no effect on the red pigment of the individual, nor was there much crumbling and disfiguring of the different sclerites. Organs and tissues were cleared by treatment with 5% KOH for 24-30 hours. Boiling in 10% KOH for a few minutes as suggested by some investigators was not found to be satisfactory, since this process produced artificial lines and sutures on the tissues. Glacial acetic acid was employed to get rid of the excess of the KOH. Then the organ was either mounted in weak glycerine or a permanent preparation of this was made in canada balsam. If the sclerites had been made too transparent, a small quantity of picric acid was added to clove oil, to give a yellow stain. The forewings had to be dechlorified in order to show their veins distinctly.

To get satisfactory sections, of the head capsule, Awati's procedure (1), with some modification was adopted :—

The head of the living insect was cut off and allowed to remain for 30 hours in the fixative of Carnoy and Lebrun. Then the head was put in 90% alcohol for 5 to 6 days. In absolute alcohol, a few hours' (4 hours) immersion was found sufficient to dehydrate it completely. Then taking it through a mixture of absolute alcohol and chloroform it was placed in pure chloroform for 48 hours. Thence it was heated in molten paraffin for 4 hours. Sections of  $6\mu$  to  $8\mu$  thickness were cut and stained on slide, with Heidenhain's iron haematoxylin. Delafield's haematoxylin and eosin in 90% alcohol were also tried.

For the internal organs—digestive, nervous and reproductive—besides alcohol, various other fixatives and preservatives, among them the following, were tried :—

- (1) Bouin's fluid—  
fixed for three days and washed in 90% alcohol and preserved in 75% Alcohol.
- (2) Picro-acetic acid—  
fixed for 24 hours, washed with 70% alcohol to which carbonate of lithium had been added; preserved in 75% alcohol.
- (3) Picro-nitric acid—  
fixed for 15 hours, washed and preserved as in No. 2.
- (4) Formaldehyde 40%.....10 vols.  
Alcohol 90%.....90 vols.

In the case of the digestive system, formol-alcohol gave as good results as any of the first three. But for the study of the reproductive organs, Bouin's fluid and picro-acetic acid were found to be more suitable.

The investigation of the respiratory system presented many difficulties. The tracheae, being of the same pale colour as the surrounding fat tissues, could not be easily distinguished. To make them conspicuous the following method of injection was employed :—

The insect was placed in a tube containing a solution of Indian ink, which was kept in a flask whose mouth was connected to an aspirator. When the air contents of the flask and tube and ultimately of the tracheae were exhausted, the ink was forced into the empty tracheae. The insect was then treated with 5% KOH for 24 hours; this treatment dissolved out all the soft tissues, leaving the chitinous (black) tracheae in situ behind.

The habits recorded here are mainly from my observations in the experimental cotton fields at Pusa.

The insect is bisexual and the male, which is comparatively smaller than the female, is chosen for description.

The measurements given in the text are the average of the organs of at least 10 freshly killed specimens.

## HABITS AND GENERAL ACCOUNT.

The red cotton bug often termed as one of the cotton stainers, is known by various vernacular names in different parts of India; Chainpa (Punjab), Bania (Saharanpur), Behna (Cawnpur), Kappa Poka (Orissa), Tola Poka (Dacca), Lal Chingum (Central Provinces), etc., etc.

It is generally met with in summer, in winter it hides in crevices of the earth. In those parts of India where there is no severe winter, it can be found throughout the year. In the Punjab it is seen from the end of February to the middle of November, sometimes even later.

As the name implies, it is one of the specific pests of cotton; it sucks the juice from the green bolls, and when they open, it attacks the young oily seeds, making the lint dirty with its yellow excreta. It prefers young pods of 'Bhindi'—*Hibiscus esculentus* (Lady's finger) to cotton bolls, hence the former is used as a trap-crop in cotton fields. In a cage containing equal number of bolls and pods (both green) the number of insects gathered on the pods and bolls was in the ratio of 20 : 12. It does not restrict its activities to cotton and 'Bhindi' only, but attacks other Malvaceous plants also which have juicy, succulent and oily seeds, e.g., silk-cotton tree, etc.

The insect is of a deep red colour, with ochraceous wings. Head, rostrum, anterior transverse pronotal callosity, the first joint of the antennae and the abdomen are sanguineous. The apex of rostrum, scutellum and the spot of corium, membrane of the hemelytra, the second wing, the tibia and tarsi of the legs and the eyes are black. The anterior collar of the pronotum, the anterior margin of the prosternum, posterior margins of the sternal and abdominal segments and the spots at the bases of the legs are creamy white. The pronotum and the corium are ochraceous.

The habits of the nymphs are similar to those of the adults. They feed gregariously and expose themselves freely on their food plants forming conspicuous red clusters.

The adult insect, though provided with two pairs of well developed wings, scarcely flies. It runs freely and travels from plant to plant by this mode rather than by flying. In movements the first pair of legs points forwards, the second outwards and the third backwards.

*Dysdercus cingulatus* can live without food and air for a considerable length of time, for example, of three individuals of each sex kept in an empty pill box (6.5 cm. high and 7.5 cm. in diameter) one male and female remained alive for 84 hours.

During spring and summer, when food is plentiful, copulation takes place; in this process the heads of the pair are turned towards opposite sides. Copulation may last as long

as 60 hours, during which, their normal activities of life, i.e. taking in of food, and general movements, are not suspended. They remain moving from place to place, the female generally leading the way.

#### ANATOMY—EXTERNAL.

The body is covered all over with chitin which is thickened at certain places to form definite plates or sclerites.

*The Head* (Figs. 1, 2, 3b and 4b) is triangular, its ventral surface is flat whilst the dorsal surface is depressed anteriorly. The great development of the ventral or gular region prevents the deflection of the head. The latter is deep red with the exception of the eyes and the antennae, which are black. The ventral lip or labium, is much longer than the dorsal lip or labrum and is generally carried deflected on the ventral surface, where there is a shallow groove to receive it. Ocelli are absent.

Although the different sclerites composing the head are too intimately fused, the following regions (beginning from the posterior end) can be distinguished :—

*Occiput* (OC. Fig. 3b) is the collar-like region forming the boundary of the occiput foramen; during life it is scarcely visible being telescoped under the anterior region of the prothorax.

*Epicranium* (EP. Figs. 1, 3b) is a flat plate lying anterior to the occiput and bears a pair of conspicuous black eyes. It has a median longitudinal furrow reaching the base of the clypeus. Tower (27) applies the terms "Cranium" and "Frons" to the anterior and the posterior parts of the epicranium of the squash bug (*Anasa tristis*). But in *D. cingulatus* there is no suture or even an impressed line to warrant the division of epicranium into two regions.

*Clypeus* (CIY. Figs. 1, 3b, 7a, 7b) which is a broad plate in mandibulate insects, is comparatively long and narrow in *D. cingulatus* and forms the anterior median portion of the head. Laterally it is enclosed by the two fulera (FR.). At its base where it is attached to the edge of the epicranium, the clypeus is flat and narrow, but anteriorly it depresses down and at the same time widens to form a base for the attachment of the labrum. Its dorsal surface has irregularly scattered fine setae which are probably sensory; and the sides are sunk down into the head to form the clypeal folds (CIY. Figs. 8e, 8f).

*Fulera* or the two triangular pieces on the sides of the clypeus (FR. Figs. 1 and 3b), are confluent at their base with the edge of the epicranium. They probably correspond to the frontal ridges of Muir and Kershaw (14). In the Potato capsid bug (*Lygus pabulinus*) Awati (1) makes no mention of fulera but terms the corresponding region maxilla sclerite (text-figure 17), and shows it to be the base of the mandibular protractors. In

his figures 10-15, he applies the same name to a ventro-lateral part (maxilla lamina) forming the bases of the maxilla protractors. Obviously the same name can not be used for two different sclerites. Probably the piece termed maxilla sclerite in Fig. 17, is homologous to the fulcrum of *D. cingulatus*.

Genae. These sclerites beginning from below and behind the eyes and extending downwards to include the base of the antennae form the lateral walls of the head in the region of the epicranium. Ventrally these come in contact with the gulae.

Maxillary Laminae (Mx. La. Fig. 4B), termed 'Lovae' (Parshley) 'Maxilla plates' (Muir and Kershaw), 'Maxilla sclerite' (Heymons), are two triangular plates, which begin from the base of the antennae and extend to the tip of the head, thus forming the ventro-lateral boundary of the mouth. Their dorsal edges come in contact with the ventral edges of the fulcrum, while ventrally they enclose the membranous base of the rostrum. These sclerites, as above stated, form the base for the attachment of the maxillary protractors. Heymons considers these to be part of the embryonic maxilla.

The postero-ventral portion of the head is supported by flat plates called gulae (Gu. Fig. 2). They extend backwards to the occipital foramen. Antero-laterally they are continued with the maxillary lamina while their median region forms the base for the attachment of the rostrum (Fig. 2).

Buccale (Bu. Fig. 4B), described as chitinized plates on the head of *Anasa tristis* by Tower are merely folded portions of the membranous base of the rostrum, protruding between the latter and the maxillary laminae.

The head possesses one pair of feelers or antennae (Ant. Fig. 1, 3b). They are black, 8.5 mm. long, free and capable of movement in all directions. They consist of 4 segments with an antennal tubercle at the base. Segment I is the longest (3 mm.) of all. Its proximal end has three stout inwardly pointed spines. Segments II and III are 2.25 mm. and 1 mm. long. The fourth is club shaped, 2.5 mm. long, entirely covered by fine setae, which are probably sensory.

Mouth parts: In the order Rhynchota, the mouth parts being modified for piercing and sucking purposes, have diverged widely from the mandibulate type. They consist of a labrum, a labium and two pairs of stylets (an external and an internal pair). Awati has given a summary of the views concerning the homology of these organs. The generally accepted view is that in the mouth parts of Rhynchota the first maxillae are represented by the internal stylets, the mandibles by the external stylets and labium by the rostrum. Maxillary palps are absent. Heymons and several others regard the labial palps as absent although Savigny (*Memoirs sur les Animaux sans Vertèbres*, 1816), and Léon (*Beiträge zur Kenntniss der Mundtheile der Hemipteren*, Jena, 1887) found

these in a few forms. According to Heymons the so-called labial palps are secondary structures formed from the 3rd segment of the proboscis, whilst Léon maintains that it is not possible for secondary structures to grow where there were primary ones before and perform the same function as the latter. The argument of Léon does not appear to be convincing, since it is highly probable that these secondary structures of Heymons are not sensory and do not perform the function of the original palps; the sensory activity of the labium having been transferred to the tip of the rostrum.

Morphology of the mouth parts: Labrum (L.R. Figs. 3b, 4b, 7b), is an unpaired flap hinged to the anterior margin of the clypeus. It is tapering towards its free end and 2 mm. long, extending as far as the first segment of the labium. It has a broad base and semilobate margin. The dorsal surface is covered with small (sensory) hairs or papillae. On the ventral surface runs a shallow groove which, in the proximal regions, is sufficiently deep to hold the stylets in place and to prevent their lateral movements.

Rostrum or labium (LB. Figs. 6a, 3b) is the segmented lower lip. It is sub-cylindrical in cross section, with a longitudinal groove running down its dorsal surface. In the region of the 1st segment the groove is very shallow as mentioned above, but beyond the apex of the labrum it deepens and forms a trough in which the stylets lie (Fig. 6c). Two tracheae, two nerve cords and several muscle bands run throughout its length (Fig. 6c). Of the four segments constituting the labium the first is broader and shorter, the joint between this and the next is swollen and acts as a hinge upon which the whole of the labium is bent and doubled when the animal is sucking plant juice. This bending and shortening of the proboscis facilitates mechanically the penetration of the stylets in the deeper tissues of the plant. The 2nd, 3rd and 4th segments are narrow and long, and the proboscis gradually tapers towards the extremity which is black and bifid. Each lobe of the bifid tip bears six small papillae as well as four long curved pointed bristles (Fig. 6l).

There are two pairs of stylets, internal (maxillary) and external (mandibular). The lateral edges of the clypeus towards its tip are bent under so as to form a pair of narrow supporting lobes, which enclose a passage for the stylets to pass inside the head (Fig. 7b). On entering the head, the two pairs of stylets diverge apart (Fig. 6a), one member of each pair lying on each side of the pharynx, the mandibular (external) being more superficial.

The base of the maxillary stylet is much swollen and, in transverse section (Mx. B. Figs. 8a, b), presents the appearance of a glandular tissue surrounded by a thin layer of chitin. As the sections are traced forwards, the stylet becomes hollow and

circular in outline (Fig. 8c); a little before it leaves the head capsule two grooves appear on it and make the stylets appear  $\Sigma$  shaped in cross section (Fig. 8). The grooves are on the side facing the pharynx and are continued to the apex of the stylets. Beyond the head capsule the grooves form two canals by the approximation of the stylets. Into the upper or suction canal opens the tip of the pharynx, whilst the lower canal receives the efferent salivary duct (S.C. and E.C. Fig. 6b). At the base of the maxillary stylet is a curved chitinous rod (Mx.L. Fig. 6d) which starting from the maxillary base is at first directed towards the pharynx for a little distance, then turned back below the base and is finally attached to the head wall by a delicate articulation. The apex of the maxillary stylet is smooth and lancet shaped (Fig. 6f) without hooks or any other ornamentation. This stylet is controlled by two series of stout powerful muscles, both of which are directly attached to its base (Fig. 8), one set, the protractors, run anteriorly and are attached to the maxillary lamina, the other, the retractors, are directed backwards and joined to the occipital wall.

**Mandibular Stylets** (MN. Fig. 6a, 6b and 6g): They arise in the region of the antennae and lie close to the outer sides of the maxillary or internal stylets, without any definite articulation. This stylet also has a swollen base which narrows posteriorly; the mandibular protractors being attached to its hind end. The mandibular protractors, at one end are attached to the inner side of the epicranium and the fulcrum, and at the other end they are connected to a triangular chitinous piece, the mandibular lever (MN. L. Fig. 6a). The latter is connected to the base of the mandible by means of a slender chitinous rod. The apex of the stylet is acute and pointed. It is ornamented with six backwardly directed hooks.

The measurements of the different parts of the head of a male individual are as follows:—

Length of head to the base of the labrum = 1.87 mm.

Breadth of the head in the region of the eyes = 1.05 mm.

Length of the antennae (Seg. I, 3 mm., II, 2.25 mm., III 1 mm., IV, 2.5 mm.) = 8.75 mm.

Length of the rostrum = 6.4 mm.

The total length of the male = 13 mm.

*N.B.*—The Individuals were chloroformed and their organs measured within 20 minutes after their death.

*The Thorax.*—Audouin, as early as 1824, showed that the thorax is composed of three similar segments, pro-, meso- and metathorax. Each segment is composed of four regions: the dorsal tergum or notum, the two lateral pleura and the ventral sternum. Each pleuron is composed of two plates, the anterior being termed the episternum and the posterior the epimeron, a narrow strip along the anterior margin of the

episternum called the parapleuron and lastly the peritrema, which is a small plate containing the spiracles. The notum is composed of the prescutum, the scutum, the scutellum and the post-scutellum forming a linear row.

The thorax in *Dysdercus cingulatus* is well marked, jointed to the head by a soft neck, which is completely overlapped by the prothorax. Its dorsal surface is large and convex, while the ventral is short and flat.

Prothorax (Fig. 4b) is large, closely attached to the posterior part of the head and overlapping the anterior region of the mesothorax.

The pronotum (PR.N.) is trapezoid in shape, 2.04 mm. broad in front and 3.2 mm. at the hind end, convex in the middle; its deep red lateral margins being somewhat dilated and reflexed. It is a single undifferentiated piece, and according to Martin (15) corresponds to the scuto-scutellum only, the pronotum being devoid of post-scutellum owing to the absence of wings in this segment.

The anterior margin of the notum is white (1.3 × 2.3 mm.) which, with similar portions on the pleuron and sternum, forms the apical structure (AP. ST.). Behind the latter is the deep red pronotal callosity. The rest of the notum is chrome yellow and leathery in texture.

The pleuron (Pl.1) is broad above (2.09 mm.) and narrows down to meet the sternum. The ventral margin of the pleuron is white and overlaps the base of the coxa with the coxal cleft (Cox. CL.1) in the middle. In the middle the pleuron bulges out to accommodate on its inner wall the expanding muscles of the first leg. The posterior margin of the pleuron is white and overlaps the anterior margin of the mesopleuron and the 1st thoracic spiracle.

Prosternum (Fig. 2, St.1) is a flat almost rectangular plate 1 mm. long. It is comparatively narrow in the posterior region, where it lodges the coxae.

Mesothorax is the best developed of the three thoracic segments owing to the attachment of the first pair of wings. It is comparatively longer dorsally, overlapping a part of the metanotum and is delicately connected to the prothorax.

The mesonotum (Fig. 3c) is a conspicuous piece whose anterior half—greatly deflected and covered by the pronotum—is rectangular in shape, with a deep median furrow, and is composed of the prescutum and scutum. Behind the scuto-scutellum and separated from it by a wide shallow groove, is the prominent triangular scutellum (SL). The latter is deep red with black margins and is supported laterally by stout chitinous ridges—the frenum—which reach the base of the wings. The post scutellum (P. SL.2) is a stout, transverse, curved sclerite slightly visible externally, being covered by the scutellum and

the metanotum. Its two ends, forming the post alares, meet the lateral edges of thorax just behind the base of the forewings.

Mesopleuron is a more or less rectangular plate with no pleural suture, but divisible into two rectangular areas, one behind the other, a red broad anterior and a white narrow posterior. Their line of demarcation is continued at the ventral margin, into the coxal cleft (cf. propleuron). When the mesopleuron is made transparent, these two areas are seen to be connected with each other by transverse chitinous strands, hence probably representing the episternum and epimeron (EPS2. and EPM2.). This condition, viz., the presence of the coxal cleft and the absence of the pleural suture, has been observed in only a few other Heteroptera (Taylor—29).

A triangular piece is differentiated from the anterior end of the episternum, just below the origin of the forewing and is termed anterior basalare (A.B.) At the posterior corner of the anterior basalare is located a somewhat triangular apedome the position of which is externally indicated by a concavity. From the lower corner of the same sclerite (i.e. anterior basalare) begins a chitinous piece (prealare bridge—P.A.) which connects the pleuron with the deflected part of the scutum. Under the base of the wing, the slender subalare can also be distinguished. At the anterior margin of the pleuron is situated the first thoracic spiracle surrounded by its peritreme.

Metathorax is invisible externally, being overlapped by the meso-scutellum and the fore wings. It bears the 2nd pair of wings.

The Metanotum is differentiated into the scutoscuteum (PSSL3 Fig. 3c) and postscutellum (P.SL.3), which are regarded as the two incipient sclerites of a thoracic segment (Snodgrass, *Entomological News*, 1909). In other words the anterior sclerite, which in the mesonotum breaks up into the prescutum, scutum and postscutellum, remains a single undifferentiated piece in the metanotum. This condition is met with only in a few other Heteroptera (some Aphidae and Coridae).

Metapleuron is comparatively narrow dorsally. The delicate intersegmental membrane connecting it to the mesopleuron lodges the second thoracic spiracle surrounded by its peritreme. As is the case in the mesopleuron, there are two rectangular plates one behind the other, which in the living animal are differently coloured, viz., red and white. These probably represent the episternum and epimeron. It may, however, be pointed out that the line separating the two plates is not continuous with the coxal cleft, as is the case in the mesopleuron.

Near the dorsal margin of the pleuron there is a grooved longitudinal area called cenchrus, the upper edge of which touches the postalare. In the anterior ventral region of the pleuron, just behind the second coxae is a silt-like opening of the stink glands.

Thoracic appendages: legs—The usual three pairs of legs are long and of considerable strength consisting of the coxa, trochanter, femur, tibia and tarsus. The animal can walk very swiftly on its tarsal joints on ground and even on a smooth surface like glass.

The bases of the coxae of the two sides (COX.) are closely approximated, between which lies the rostrum (Fig. 2). Trochantin (TROCH.) is a more or less triangular sclerite situated at the base of the coxa. Trochanter (TRO.) is a short and rather slender joint articulated to the femur by a ginglymous joint. Femur is the strongest segment of the leg having near its distal end (in the first leg) 6 spines arranged in two rows of three each.

Tibia (TB.) is longer than the femur and is connected to the latter by a ginglymous joint which is raised up especially in the third leg. The distal half of the tibia is ornamented with thick, black bristles, besides a few strong spines called calcaria (CAL.).

Tarsus (TR.) is short and slender, consisting of three joints, the basal being the longest. All the three tarsal segments are black and have closely set small spines. The tarsus ends in a pair of black claws which are supported beneath by stalked pads known as pulvillus. West (*Transactions Linn. Soc. London*, XXIII, 1851) regarded the pulvillus as homologous to an additional tarsal segment, the claws in that case being regarded as modified setae. According to other authors the stalked pads are modified glandular setae swollen at the ends.

Wings. The fore wings, known as hemelytra (Fig. 5a), are attached to the lateral margins of the mesoscutum by small chitinous plates the auxiliaries or ossi:ula (Audouin). Each forewing is 7·8 mm. long and 3·7 mm. broad being partly coriaceous and partly membranous. The coriaceous part is ochreous in colour, with a black discal spot, and is marked off by means of two longitudinal sutures (suture clavi and median suture) into three areas, the clavus, corium and embolium. The clavus lies between the inner margin of the wing and the suture clavis, and next to the mesoscutellum when the wings are in repose. The corium (CR.) lies next to the clavus, between the two sutures. The embolium or costal area (EMR.) lies next, ending distally in the costal margin of the wing. This is the longest of the three areas. The cuneus (Comstock p. 125, Fig. 141) is absent. The membranous region is dark brown in colour. When the wings are in repose the membrane of one side crosses over to the other, the right covering the left.

The following chief veins can be recognized in the forewing:—

- (i) Costa (COS.) is a prominent vein running parallel to the costal margin.
- (ii) Subcosta (S. COS.) runs below and parallel to the above.
- (iii) Radius (RA.) a conspicuous vein lying just below the subcosta; the proximal portions of the two veins coalesce.
- (iv) Median vein (Me.) runs just above and parallel to the suture clavis with its distal end curved up.
- (v) Cubitus (CU.) lies below and parallel to the suture clavis.
- (vi) The Anal (ANA.) is a narrow vein running along the inner or the proximal margin of the wing.

The medio-cubitus and radio-median of Comstock are absent.

There are two cells (areas surrounded by veins on all sides) in the membrane region (M.c.1, M.c.2) in the majority of the individuals examined, but in a few there were three. The number of veins also varies from 6-8 and their branching may be different in the right and left wings of the same individual.

Hind wings like the forewings are attached to the thorax by the chitinous ossiculae. These wings are wholly membranous except at their costal margins which are very thick. The following veins which are named after Fieber (*Ent. Hemipt.* 1861, p. 13) can be recognized:—

Costa primaria (COS. P.) running parallel to the distal margin of the wing. Costa subtensa (COS. S.) lying parallel to the costa primaria, the two being connected to each other by a transverse vein, the costa connectus (COS. C.). Costa apicalis (COS. A.) starting from the junction of the costa connectus and costa primaria. Below the costa apicalis runs another vein (unnamed by Fieber) starting from the costa connectus. This vein is present in *Anasa tristis* (Tower, 27). Costa decurrens (COS. D) begins from the junction of the costa subtensa and costa connectus, and costa lineata runs parallel, along its proximal region, to the costa subtensa. Lying below costa subtensa are two veins, the costa radiantus (COS. R.)

Below are given the measurements (average of 10 specimens) of some of the more important regions of the Thorax—

A. Prothorax.—

Length of notum	..	..	2.04 mm.
Breadth	..	..	3.2 mm.
Collar	..	..	1.31 × 5 mm

Pleuron.—

Lower margin	..	..	1.31 mm.
Sternum length	..	..	1.0 mm.
Upper margin	..	..	2.09 mm.

B. Mesothorax.—

Length of scutoscutellum	..	..	1.28 mm.
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Breadth in widest region	..	1.7 mm.
Scutum (length and breadth the same)	1.6	„
Pleuron upper margin	..	1.34 „
Pleuron lower margin	..	1.11 „
Sternum	..	1.17 „
Forewing	..	10 × 3.30 mm.
C. Metathorax—		
Pleuron, upper margin	..	9.2 mm.
Pleuron, lower margin	..	1.6 „
Sternum	..	1.08 „
Wing	..	7.8 × 3.7 mm.
Leg—		
Femur I	..	3.16 mm.
Femur III	..	4.25 „
Tibia I	..	3.16 „
Tibia III	..	4.5 „
Tarsus I	..	1.7 „
Tarsus III	..	2.2 „

*The Abdomen.*—The abdomen in the Rhynchota has attracted the attention of a few authors. The study of the genitalia is coming into prominence and various workers (Newell, Sharp, etc.) have attempted to discuss the homologies of the different abdominal segments with their appendages; but so far no definite conclusion seems to have been arrived at. David Sharp (22) invented a special nomenclature with reference to the terminal segment in some male Hemiptera. According to Verhoeff, the typical number of abdominal segments in the Hemiptera is eleven. In five out of six hemipterous forms that Newell (17) studied, 10 segments were present, the eleventh having disappeared, whilst in the sixth—*Anasa tristis*—the female had 11 segments and the male 10. According to Tower (27) the female *Anasa* has 10 and male 9 segments. In *Dysdercus cingulatus* 10 segments are found in both sexes. Further study is required to determine whether the number 10 is a primitive feature or secondary (the 11th having been aborted) as believed by Verhoeff, etc.

The abdomen is connected to the thorax by a broad base. Its simple, distinct and annular segments are loosely knitted together, allowing the abdomen to undergo expansion and contraction, especially in the female. In both sexes (Figs. 2, 3, 4) the first six segments are seen to be made up of flat notum, red membranous pleuron and sternal area with white patches on the posterior margin.

A pair of spiracles is present in the anterior dorsal corner of each of the first eight segments. Each spiracle (Fig. 4a) is a small round opening with somewhat thickened brown margin.

Three transversely elliptical openings of the stink glands

are seen in the mid-dorsal line of the abdomen. They are in the intersegmental membrane of segments 3/4, 4/5, 5/6.

In both sexes, the anterior half of the notum of segment I (Fig. 3) is thickly beset with long hairs, and the posterior margin of V is produced backwards into a lobe to fit in a notch on the anterior margin of the notum of segment VI. The subsequent segments have deviated from the simple form above described, being modified differently in the two sexes. To make this clear a separate description of the male and the female is given below:—

Male (Figs. 3a, 4a, 10a).—Segment VII is the hindermost of the visible segments. Its notum is produced backwards into a large blunt lobe covering the posterior chamber of the terminal segment. Segments VIII–X are telescoped into one another to form a pear-shaped organ, the major portion of which remains retracted in VII. Segment VIII appears dorsally as a transverse band, which widens down laterally to meet the broad trough-shaped ventral part. Segment IX resembles a hollow pear-shaped body whose upper surface has sunk down to meet the ventral surface in front and behind, leaving between a narrow transverse band. Consequently this segment is divided into two chambers, the small anterior and the spoon-shaped posterior or terminal (Sharp), separated by downwardly deflected double wall, called the diaphragm. The rectum and genital duct pass through this diaphragm to open externally in the terminal chamber. Segment X is small, ringlike and surrounds the anus in the terminal chamber.

Anal cerci are absent. The genital duct terminates in a chitinous copulating organ termed oedeagus (Sharp) situated in the terminal chamber. The oedeagus usually remains concealed under the rectum. It is surrounded by a thick chitinous coat termed theca, and its wall is strengthened by four thick chitinous pieces, two of which are pointed and curved at their ends (OE. S. Fig. 10d). Lateral to the oedeagus lie two long pieces, one on each side and called the laterals (Sharp) (L). The diaphragm is supported by vertical pieces called the superior laterals (S.L. Fig. 10c). Below and covered by the laterals, lie two processes attached to the ventral floor of the terminal chamber; they are probably the homologues of the inferiors of Sharp (22). At the base of the oedeagus is a thick chitinous piece which is horse shoe shaped.

In the female, the abdomen is wider and longer than in the male, the width depending upon the number and condition of the eggs within. VII is the last visible segment; its notum is deeply concave posteriorly, the concavity being covered by the notum of VIII. The latter segment (Figs. 11a and 11b) consists above of a narrow transverse band to which are attached broad ventral plates (due to the fission of the sternal portion) which are thickly covered with bristles and enclose

the remaining posterior segments. The tergum of segment IX is narrow and almost encloses that of X (Fig. 11a), whilst its sternum (A9 Figs. 11b, 11c) consists of two flat plates, the inner margins of which are thickened and hardened. From the tergum and sternum of IX, hang down two pairs of thin curved processes. Segment X surrounds the anus. Dorsally and laterally it is enclosed by IX. An ovipositor is absent, since the animal lays its eggs in soft places between crevices of the soil.

Measurements—

Length of abdomen in male	..	7 mm.
Breadth	.. .. .	4 mm.
Length of abdomen in female	..	8.25 mm.
Breadth .... variable in female..		4.5–5.5 mm.

ANATOMY—INTERNAL.

*Digestive system*—The mouth leads into the suctorial pharynx which is of special importance in the Rhynchota. The pharynx is a long chitinous tube with a narrow lumen. Its ventral wall is strongly chitinized, whilst the dorsal, termed operculum, is flexible and elastic. There is a double row of pharyngeal muscles arising from the under surface of the dorsal wall of the head and inserted on the operculum, where they split up into a number of strands (Ph.M. Figs. 8b–8f). When these muscles contract, the operculum is pulled upwards so as to widen the pharynx, and the plant-juice is sucked up through the rostrum.

The minute anatomy of the pharynx (Fig. 8) varies in the different parts of the head capsule. In the epicranial region, where it is surrounded on all sides by the cerebral nervous ganglia (Fig. 8a), the pharynx is thin-walled and almost circular in transverse section. On emerging from this mass, the pharynx enters the clypeal region where its ventral wall becomes comparatively thicker than the dorsal (Fig. 8c); beyond this region the difference in thickness increases, and the ventral wall is drawn down so as to appear V-shaped in transverse section (Fig. 8d). The 'V' is wedged in between two chitinous plates of the tentorium (T) to be described later. In the anterior region of the clypeus, the ends of the operculum and the arms of the 'V' are drawn up towards the dorsal wall of the head, to meet the clypeal folds (Fig. 8e). From the level of the anterior end of the salivary chamber, the ventral wall of pharynx is continued as a delicate spoon-shaped structure, the pharyngeal duct, along the middle line and enters the suction canal formed by the maxillary stylets. The latter enter the head and diverge apart to receive the tip of the pharynx.

In the region of the pharyngeal duct, the operculum be-

comes separated from the ventral wall and lines the upper wall of the head capsule. This pharyngeal lining of the clypeolabrum forms the membranous roof of the mouth and is termed the epipharynx; a pendent epipharynx is absent. Under a high power of the microscope, ten transparent spots are seen in the membranous epipharynx arranged in two rows, six in the right rows and four in the left (Fig. 7a). Behind there is a curved ridge which encloses an additional group of spots. Tower (28) regarded similar structures in *Anasa tristis* as glands which secrete an oily substance to lubricate the diverging stylets lying below. Packard considered these as taste organs. Awati (1), in capsid bug, termed this region of the epipharynx as cribriform plate, and the clear spots would be the openings by which nerve fibers from the gustatory organs communicated with the lumen of the pharynx. Murray (16), in bed bug (*Acanthia lectularia*), observed a row of 10 delicate spines in this region.

The pharynx after passing through the oesophageal nerve-ring, is continued as oesophagus. The latter is also lined by chitin and runs as a fine tube up to the region of the mesothorax where it dilates to form the crop. The oesophagus is continued into the crop for a length of 1 mm., thus forming a valve to prevent the fluid from flowing back (Fig. 12a).

The crop (Fig. 12) begins usually from the mesothoracic region and ends in the middle of the abdomen. Powerful muscle fibres occur on its upper surface in the metathoracic region, while a salivary gland is present on each side. There is no proventriculus.

The midgut or the chylific stomach (Chyl.) is comparatively narrow and thrown into three coils, which lie under the crop. When the coils are unravelled the midgut is found to be the longest (21 mm.) portion of the alimentary canal.

No cæcal appendages are present. Four malpighian tubules open into the alimentary canal at the junction of the midgut and hindgut. These tubules are whitish cæcal extensions of the latter, each being 5 mm. long and irregularly coiled.

The hindgut consists of a rectum which is a pear-shaped brown organ with chitinous lining.

*Salivary glands.*—There are two such glands in the region of the metathorax, the right lying behind the left. Each gland (Fig. 13) consists of four lobes, labelled A, B, C, and D, in the diagram. A and B have glandular constitution (large glandular cells with conspicuous nuclei) while C and D have transparent walls; C seems to take the place of the salivary receptacles of the cockroach, while D is the small reservoir from which the saliva flows out through the salivary duct (S.D.) and the receptacle duct (R.D.) The receptacle duct is thin at its origin, subsequently becoming thick. After entering the head capsule it turns back and opens into the salivary re-

ceptacle C. The receptacle duct seems to conduct the extra saliva from D to the receptacle C, from which the saliva can flow back if necessary. The salivary duct proper (S.D.) or afferent salivary duct (A.S.D., Figs. 9 and 13) starts from the reservoir (C) and passes forwards as a white thick walled tube, and enters the head region running parallel to its fellow of the opposite side. Ultimately both these tubes converge and discharge their contents through a common opening into the salivary pump chamber. This opening situated in the antero-ventral region of the salivary pump chamber seems to be guarded by a valve which opens inwards into the cavity of the chamber, thus preventing the saliva from flowing back. The ducts do not appear to unite to form a common afferent salivary duct.

The salivary duct has a thick chitinous lining, external to which lies a distinctly nucleated cellular layer. Both the reservoir and salivary ducts are surrounded by spiral threads, so as to keep them distended.

The salivary pump (Figs. 9 and 13) is a minute cylindrical organ lying under the pharyngeal duct, where the diverging stylets enter the head capsule. It is supported laterally by the arms of the tentorium (Figs. 6 and 8). The pump chamber proper (P.C.) is chitinous and almost rectangular in shape. The afferent salivary ducts enter it by an opening in the antero-ventral region, whilst the efferent salivary duct (E.S.D.) leaves it by an opening situated in the upper region of the anterior wall. The posterior wall of the rectangular chamber is thin and flexible except in the centre where it is highly thickened and chitinized to form the head of the piston (Pi), which is produced backwards into a stout bar-the piston-handle-connected to the occipital wall of the head by means of two series of powerful muscles (Pi.M.). When the latter contract, the piston is drawn back, increasing the size of the chamber with the result that saliva flows in from the afferent ducts. When the piston returns, the saliva, owing to the increasing pressure, flows out by the efferent duct. This duct is supported by a grooved prolongation of the anterior wall of the pump chamber, known as the pump stem (P.S.) The latter supports below the afferent duct and above the pharyngeal duct, carrying these, one over the other, to the ejection and suction canals respectively. Thus the saliva does not pass to any part of the alimentary canal, but is conducted by the ejection canal directly into the plant tissue.

As to what is the real hypopharynx, seems to be a debatable point. Muir and Kershaw (13) regarded the terminal portion of the pharynx as the hypopharynx, and the ventral wall of the pharynx as continued forward to form the spoon-shaped end of the hypopharynx. Tower (28) held a similar view. Awati (1), on the other hand, considered the anterior region of the pump

stem as the hypopharynx. According to this author the pump stem does not reach the ejection canal; where the latter ends, the hypopharynx begins and supports the efferent salivary duct and the pharyngeal duct. This view is supported by the diagrams of Cragg (2) and in *Dysdercus cingulatus* there seems to be a single individual piece. The pump stem extends from the anterior end of the pump chamber to the point of entrance of the efferent duct into the ejection canal. According to Sharp (23) the "Hypopharynx or the tongue is a membranous lobe in the anterior of the mouth on its ventral surface, a very conspicuous structure in the Orthoptera." Such an organ does not appear to be present in *Dysdercus cingulatus*, unless the whole salivary pump be regarded as its homologue. Davidson (23), in regard to aphid *Schizoneura lanigera*, remarks that "situated beneath the mouth is the small hypopharynx which supports the chitinous salivary pump and is continuous with the labium," here the author seems to be referring to a part of the tentorium.

*Tentorium or the Endoskeleton* (T. in Figs. 6a, 7b and 8a-8e).—The internal soft parts of the head capsule are supported by chitinous plates, collectively termed the tentorium. Two of these plates (Figs. 8c, 8d) support the ventral wall of the pharynx, and in transverse section appear crescent-shaped, in which the 'V' of the pharynx rests. In the region of the salivary pump, the plates send down processes which meet in the median line so as to form a broad plate extending to the base of the labium (Fig. 8a-8f). Opposite the anterior end of the salivary pump, the outer margin of the plates are rolled upwards to form two dark heavily chitinated horn-like structures, the tentorial horns (T. Ho in Fig. 6a). These horns approximate to the clypeal lobes to form a passage for the diverging stylets which enter the head at this level. Internal to each compound eye (Fig. 8c) is situated a delicate chitinous piece which serves as a support for the eye structure.

*Reproductive System.*—Male (Fig. 14): The essential male organs are:—(i) a pair of testes, (ii) 2 vasa deferentia, (iii) 2 accessory glands, (iv) single ejaculatory duct, (v) penis (oedeagus) or the copulatory organ.

(i) Testes.—Whilst in the cockroach the testes are follicular and difficult to distinguish from the surrounding fatty tissue, in *Dysdercus cingulatus* each testis is a compact mass, which can be easily discerned when the animal's dorsum is removed and the alimentary canal turned aside. The testes are red in colour, cigar-shaped, about 2 mm. long and lie in the V abdominal segment (TE Fig. 14). *Dysdercus cingulatus* appears to be unique in that its testes lie ventral and not dorsal to the alimentary canal. The follicular nature of the testes becomes evident in transverse sections. Each testis is composed of 8 chambers containing sperm mother cells and sperms.

The accessory glands (A.G. Fig. 14) constitute a pair of white almost round organs, separated from each other in the mid-ventral line by a small space through which the ejaculatory duct passes. These glands are in contact with the ejaculatory duct for a distance of 3 mm. When rendered transparent each gland presents a honeycomb appearance, the wall of the comb appearing darker than the rest. In sections large cells are visible with distinct nuclei and granular cytoplasm. Nothing is known at present regarding the function of these glands.

The testis on each side opens into the corresponding vas deferens (V.D.) which is white and swollen at its origin where it partly covers the base of the testis, and runs as a narrow tube along the front border of the accessory gland towards the median line of the body. Subsequently the vas deferens curves at a right angle and after passing backwards for about a millimetre, the ducts of the two sides meet and continue as the single ejaculatory duct along the mid-ventral line between the accessory glands where the duct is thick walled with a red streak. Beyond the accessory glands, the duct narrows again, traverses segments VI and VII and enters the base of the penis in segment IX.

The oedeagus or penis (OE. Fig. 14) is a globular brownish powerful organ lying below the rectum. Its walls are strengthened by chitinous pieces, as described in connection with the external genitalia. Two of these pieces project beyond the opening of the penis and are curved at their ends, which with two others, the 'laterals' (L), are probably used for dilating the vagina.

Female Organs (Fig. 15): consist of ovaries, oviducts and accessory glands.

The ovaries (Fig. 15, OV.) are white flat masses lying below the alimentary canal, one on each side. Their size depends on the stage of ripening of the eggs. When the latter are fully developed, they fill up the whole abdominal cavity, sometimes extending into the thorax as well. Each ovary consists of seven tubules (Fig. 15 OV. TB.), not eight, as is usual among the Orthoptera (cf. Cockroach, Miall and Denny); the tubules are held together by fat tissue and tracheae so as to form a flat plate. Each tubule is about 4 mm. long and presents a beaded appearance owing to the contained eggs which distend its elastic wall. It tapers in front, then suddenly narrows considerably (terminal chamber) and unites with the extremities of other tubes to form a slender, solid filament, which passes forwards in the thoracic region and becomes lost in the fat body. High up in the tubule, the narrow lumen is occupied by clear protoplasm. Further below, where it is wide, large rounded masses of protoplasm appear, which gradually take up the form of eggs. These arrange themselves in a single row of 12 or 13 and give the characteristic beaded appearance. The

eggs in a tubule increase in size from top downwards, the lowest being the largest. It is pale yellow in colour and has a smooth surface. The ovarian tubules on each side open into the oviduct, which is 2 mm. long. The two oviducts unite near the hinder border of the V segment and form the wide uterus which traverses the posterior abdominal segments and opens between the sclerites of segment IX (Fig. 11b). There are no external genitalia or any other ornamentation of the vagina, since the insect lays its eggs in the crevices of the soil and not on hard plant tissues, etc., which would necessitate piercing organs.

Lying over the upper surface of the uterus is a peculiar bell-shaped accessory gland which is continued as a thick-walled chitinized duct coloured red. This duct becomes coiled and opens into the uterus (Gl. Ut.1, Fig. 15). Similar to this is another tube, which communicates with the uterus (Fig. 15) by means of a common opening. Probably this duct serves as a spermatheca for the extra spermatozoa. Near the terminus of the uterus and opening into the latter is another pair of lobulated glands (Gl. Ut.3). The incubation period of the eggs is 3-4 days depending upon the temperature and hygroscopical conditions of the atmosphere.

*Nervous System* (Fig. 16):—consists of (a) cerebral ganglia, and the nerves originating from them, (b) the ventral nerve cord with two ganglia in the thoracic region.

Since the supra- and sub-oesophageal ganglia are connected to each other by wide band-like commissures the exact limits of the two are not discernible. In transverse section they appear as a thick nervous mass pierced by the pharynx (Fig. 8). The supra-oesophageals are two pear-shaped ganglia superficially separated from each other, especially in the posterior region. The ganglia are continued forwards as the thick optic nerves which pass laterally to the eyes (Fig. 16, O.P.N.). The antennal nerves originate from the commissure, and cross the optic at its under side to supply the base of the antennae (ANT. N.). From below the origin of the antennal nerve arise two small fine nerves which end at the base of the maxilla and mandible of each side.

The ventral nerve cord (V.N.C.) runs from the sub-oesophageal ganglia to the posterior end of the abdomen. In the thorax the nerve cord is thick and flat and its double nature is evident, whilst in the abdomen it becomes narrow giving one branch in segment V, and two or three branches in the segments behind.

The first thoracic ganglion lies on the floor of the prothorax, being small and giving one nerve on each side to the first pair of legs.

The second thoracic ganglion lies in the mesothorax. It is larger than the first and gives origin to the nerves to the second

pair of legs, to the third pair of legs, and four small fine nerves to the first four abdominal segments.

*Respiratory System.*—This differs in several important points from the usual type found in insects. In both sexes there are ten pairs of functional spiracles in the pleura of the body segments—two in the thorax and eight on the first eight abdominal segments. But in the female there is, in addition, one degenerate spiracle on the ninth segment which has lost its connection with a trachea and whose opening has been obliterated. Thus in both male and the female, the ultimate and the penultimate abdominal segments are devoid of spiracles due to telescoping of these segments.

The thoracic spiracles are comparatively large oval openings with their rims highly chitinized and thickened. They are situated between the prothorax and mesothorax, and between the latter and metathorax. The second spiracle is regarded as belonging to the metathorax, the first is believed to be prothoracic by some authors, e.g., Davidson (5) and Grove (7) and mesothoracic by others, like Murray (16), Savage (21), etc. In *D. cingulatus* the second spiracle is situated near the anterior margin of the mesopleuron and is covered by the overlapping propleuron.

An abdominal spiracle is present in the antero-dorsal corner of each segment, as a small circular opening with thick black rims. Unlike a thoracic spiracle it has no valve or any other closing apparatus.

A short swollen trachea arises directly from each thoracic spiracle in the abdomen; the trachea commences from a diverticulum at the base of the spiracle (Fig. 17b). According to Murray, this diverticulum compensates for the absence of a closing apparatus since it renders difficult the passage of foreign bodies inside.

A trachea, after its origin, divides into a dorsal and a ventral branch which give rise to well defined dorsal and ventral systems.

The dorsal tracheal system (Fig. 17a, right side of the diagram): The branches of the dorsal tracheal arm bifurcate after passing some distance inwards. In the prothorax this division occurs at the very base and thus two dorsal branches are seen to arise from the spiracle. The dorsal branches unite to form a continuous longitudinal trunk lying on each side of the dorsal median line from the first thoracic to the eighth abdominal segment. From these trunks several small branches are given off to the neighbouring organs. The minor branches of one tracheal trunk are not connected with those of the other, except in the last abdominal segment where a transverse connective is formed by the union of the posterior branches of the eighth pair of dorsal tracheae.

While the ramifications of the dorsal trunk in the abdo-

men are small, in the thorax just opposite the metathoracic spiracle it gives off a branch wider than the main dorsal longitudinal trunk. This branch divides to aerate the stout muscles lying below the scutellum of the mesonotum.

Of the two branches from the first thoracic spiracle the posterior joins the longitudinal trunk, whilst the anterior extends obliquely towards the median line of the head, giving small branches along its course and finally entering the base of the antennae.

In *Dysdercus cingulatus* the ventral branches, unlike the condition in several other bugs (7, 21, 5), do not unite to form a ventral tracheal trunk.

The ventral branch (Fig. 17a) of the first thoracic spiracle, at its base, gives off two branches—one large and the other small—to the first leg, a small branch to the second leg, and a stout branch which passes towards the median line and unites with a similar branch from the opposite spiracle. Subsequently, the main branch divides into several minor branches which, along with the oesophagus, pass through the circum-oesophageal commissure to supply the soft parts of the head capsule, two of them passing through the rostrum to its apex. The ventral branch of the second thoracic spiracle gives one branch anteriorly to the second leg, and two branches (one large and the other small) to the third leg. It then runs across to unite with its fellow of the opposite side.

The tracheae are supported internally by chitinous rings, although the diverticulum connecting the tracheae with spiracles are devoid of such rings.

*Stink Glands* (Fig. 18).—These form a pair of small sac-like organs lying on the floor of the metasternum. They are red in colour and communicate with each other by a transverse tube which is bent backwards. Each sac communicates with the exterior by a slit-like opening in the anterior ventral part of the metathoracic pleuron.

*Circulatory System*.—This system of the cotton-bug is shown in Fig. 19.

#### REPRODUCTION AND LIFE-HISTORY.

Some 40 hours after copulation the female becomes inactive, the abdomen getting greatly distended with eggs. The eggs are laid in crevices of the soil usually in two lots, the first containing some 90 to 105 eggs and the second (following 5-8 hours after the first) 50-70 eggs. A single egg is about 1.25 mm. long (the long axis of the egg agreeing with the future long axis of the larva), pale yellow in colour, soft when newly laid, subsequently becoming somewhat hard (Fig. 20a).

If the required conditions of moisture and temperature are maintained, the egg, which is pale yellow at the time of laying,

turns chrome yellow in the course of two or three days with three red spots, two near the anterior and one near the posterior end. On the fourth day the young one hatches out, and immediately begins to move about. It differs from the adult in being smaller in size and wingless. The nymph after five successive moults becomes the adult.

The body of the newly hatched nymph (20b) is yellow in colour, about 1.5 mm. long and more than .5 mm. broad, with transparent legs, antennae and rostrum. It is so delicate at this time that disturbance with a brush may kill it. After some 12 hours, when the body has turned red and the legs, etc. have become opaque, it can be safely transferred for further study to a second jar. The antennae are four jointed, the proximal joint being the longest. The proboscis is also four jointed, extending to the middle of the abdomen, the tarsi are two jointed.

After the first moult, which takes place usually 4 days after hatching, the lateral margins of the nymph (Fig. 20c) become somewhat turned up, the terminal antennal joint becomes swollen, whilst the proboscis, which at first stretches beyond the apex of the abdomen, becomes covered over by the growing abdomen.

The second moult (Fig. 20d) occurs some 10 days after the first when wing pads appear on the mesothorax and three transversely elliptical dark patches on the dorsal surface of the abdomen which are the openings of the stink glands (Sharp).

On the third moult (6 days after the second) the nymph attains to a length of 5 mm., the wing pads being .75 mm. long (Fig. 20e). The female nymph is larger than the male. White patches appear on the ventral surface of the abdomen.

On the fourth moult (7 days after the third) the individual attains to a length of 9-10 mm., and a white collar appears behind the head.

The final moult takes place 15-17 days after the fourth and the adult appears with two pairs of fully developed wings. The rate at which development takes place depends largely on food, temperature and moisture.

The above account of the life-history is based on observations taken during the months from June to August (1919) at Pusa (Bihar).

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#### LIST OF TERMS EMPLOYED IN THE PAPER.

- Anterior basalare*. A triangular sclerite at the base of the forewing, in the antero-dorsal corner of the mesopleuron.
- Anal vein*. A vein parallel to the proximal margin of the forewing.
- Apedome*. A depressed groove along the dorsal margin of the mesopleuron.
- Apical stricture*. The white collar at the anterior end of the prothorax.
- Afferent Salivary ducts*. Ducts which carry saliva from the salivary gland to the pump chamber.
- Buccale*. A membranous sclerite at the base of the labium, protruding out between the latter and the maxillary lamina.
- Calcaria*. Chitinous bristles at the distal end of the tibia.
- Chylific Stomach*. The portion of the alimentary canal between the crop and the malpighian tubules.
- Clypeus fold*. The lateral margin of the clypeus.
- Clavus*. The proximal of the three areas into which the forewing is divided.
- Cenchrus*. The shallow space at the dorsal margin of the metapleuron.
- Coxa*. The first segment of a leg.
- Coxal cleft*. The cleft at the lower end of the meso- or metapleuron.
- Costal vein*. A vein parallel to the costal margin of the forewing.
- Costal apicalis*. The vein No. 3 from the outer margin of the hind wing.
- Costal connectus*. A vein of the hind wing, connecting costal primaria and costal subtensa.
- Costal decurrens*. A vein of the hind wing running from the costal connectus to the posterior end.
- Costal lineata*. A vein of the hind wing lying on the inner side of the costal subtensa.
- Costal primaria*. A vein of the hind wing in its distal margin.
- Costal recurrence*. Two veins in the proximal portion of the hind wing.
- Corium*. The middle of the three areas of the forewing.
- Corium spot*. A black somewhat rectangular spot lying in the corium area of the forewing.
- Cubitus*. A vein in the clavus area of the forewing.
- Diaphragm*. A longitudinal downgrowth of the tergum of the IX abdominal segment of the male.
- Epicranium*. The main sclerite of the dorsal surface of the head, bearing the pair of compound eyes.
- Ejaculatory duct*. A small thin duct carrying seminal fluid from the testes to the penis or oedeagus.
- Epipharynx*. The membranous lining of the clypeus and the labrum.
- Epimeron*. The posterior portion of the pleuron in the meso- and metathorax.
- Episternum*. The anterior portion of the pleuron of the meso- and metathorax.
- Efferent salivary duct*. The duct which carries saliva from the pump chamber to the ejection canal.
- Femur*. The second segment of the leg.
- Fulcra*. A sclerite on the side of the scutellum of mesothorax.
- Gula*. A sclerite forming the ventral wall of the head capsule.

- Genae.* A sclerite forming the lateral wall of the head capsule between the epicranium and the gula.
- Inferiors.* Two pieces below the oedeagus.
- Labium.* The part of the 2nd maxilla, which forms the rostrum.
- Laterals.* A long sclerite on the side of oedeagus.
- Membrane.* The membranous black part of the forewing.
- Membrane cell.* An area surrounded by veins on all sides.
- Mandible lever.* A small triangular sclerite connecting the mandible base to the side of the head capsule.
- Mandible protractors.* Bundles of muscles connecting the base of mandible to the occipital region of the head.
- Maxilla lever.* A small curved sclerite, attached to the base of maxilla.
- Maxilla lamina.* A small sclerite between the fulera and the base of the labium, to the internal face of which the maxillary protractors are attached.
- Maxilla protractors.* Bundles of muscles attached at the base of the maxillary stylet on one side and the face of the maxilla lamina on the other, used for projecting the maxilla outwards.
- Maxilla retractors.* Bundles of muscles connecting the maxilla base to the occiput region of the head.
- Maxilla strut.* An infolding of the maxilla lamina.
- Occiput.* The collar like sclerite at the base of the head capsule.
- Oedeagus.* The copulating organ of the male.
- Operculum.* The thin dorsal wall of the pharynx.
- Pleuron.* The lateral region of a thoracic or abdominal segment.
- Prealare.* A small triangular sclerite in front of the base of the forewing.
- Postalare.* A small sclerite behind the base of the forewing.
- Pump chamber.* The chamber of the salivary pump, in which the saliva is poured in by the afferent salivary ducts and from which it is taken away by the efferent salivary ducts.
- Pharyngeal duct.* The terminal spoon-shaped tip of the pharynx reaching the base of the suction canal.
- Piston.* Piston-like calcareous piece of pump chamber.
- Pronotum.* The notum or tergal (dorsal) sclerite of the prothorax.
- Peritreme.* An annular chitinous piece surrounding the spiracle.
- Pump-stem.* An anterior prolongation of the anterior-wall of the pump chamber.
- Prescutum.* The first of the four sclerites composing the mesonotum.
- Scutum.* The second do. do. do.
- Scutellum.* The third do. do. do.
- Post-scutellum.* The fourth do. do. do.
- Pre-scuto-scutellum.* The fused prescutum, scutum, scutellum of the metanotum.
- Radius.* A vein in the forewing, behind the costa subtensa.
- Sub basalare.* A thin sclerite just below the base of forewing and above the apedome.
- Suction canal.* The dorsal of the two canals formed by the opposition of the two maxillae.
- Superior laterale.* A longitudinal chitinous piece strengthening the diaphragm.
- Tentorium.* A chitinous sclerite inside the head capsule, supporting the ventral wall of the pharynx.
- Theca.* The chitinous root of the oedeagus.
- Tentorium horn.* A rolled up portion of the tentorium at the tip of the head, forming a passage for the stylets.
- Trochantin.* A small thin chitinous piece at the base of the coxa.
- Trochanter.* The second segment of the leg, between the coxa and the femur.

## LETTERING EMPLOYED IN THE DIAGRAMS

- A. abdomen.  
 Al A10. Abdominal segments.  
 A. B. Anterior basalar.  
 A. G. Accessory gland.  
 An. Anus.  
 ANA. Anal vein.  
 ANT. Antennae.  
 ANT. N. Antennal nerve.  
 A. P. Pleuron of abdomen.  
 AP. Apedome.  
 AP. ST. Apical stricture.  
 A. SD. Afferent salivary duct.  
 Bu. Buccale.  
 CAL. Calcaria.  
 Chyl. Chylific stomach.  
 CLY. Clypeus.  
 CLV. Clavus.  
 CN. Cenchrus.  
 Cox. Cl. 1-3. Coxal cleft 1-3.  
 COS. Costal vein of the forewing.  
 COS. A. Costal apicalis.  
 COS. C. Costal connectus.  
 COS. D. Costal decurrens.  
 COS. L. Costal lineata.  
 COS. P. Costal primaria.  
 COS. S. Costal subtensa.  
 COS. R. Costal recurrence.  
 COS. 1-3. Coxae of the three legs.  
 Cr. S. Corium spot.  
 CU. Cubitus.  
 D. Diaphragm.  
 D. M. Dorsal muscles.  
 E. Eye.  
 Emb. Embolium.  
 Ep. Epicranium.  
 E. D. Ejaculatory duct.  
 EPH. Epipharynx.  
 EPM. Epimeron 2-3.  
 EPS. Episternum 2-3.  
 E. S. D. Efferent salivary duct.  
 E. C. Ejection canal.  
 FE. Femur.  
 FR. Fulera.  
 Fre. Frenum.  
 Gu. Gula.  
 Gl. Ut. Gland of the uterus.  
 GN. Genae.  
 Infs. Inferiors.  
 L. Laterals.  
 LB. A. Apex of the labium.  
 LB. B. Labium base.  
 LB. G. Labium groove.  
 LR. Labrum.  
 M. Membrane of the forewing.  
 Malpi. Malpighian tubules.  
 M.C. 1-2. Cells of the membrane.  
 Me. Median vein.  
 Mes. n. Nerve of mesothorax.  
 Mn. Mandible.  
 Mn. B. Base of the mandible.  
 Mn. AP. Apex of the mandible.  
 Mn. L. Mandible lever.  
 Mn. P. Mandible protractors.  
 Mn. R. Mandible retractors.  
 Mx. B. Maxilla Base.  
 Mx. L. Maxilla lever.  
 Mx. LA. Maxilla lamina.  
 Mx. P. Maxilla protracters.  
 Mx. R. Maxilla retractors.  
 Mx. St. Maxilla stylets.  
 Mx. SR. Maxilla strut.  
 Meta. Th. N. Nerve supplying the leg of the metathorax.  
 Ne. L. Nerve of the labium.  
 Oc. Occiput.  
 OE. Oedeagus.  
 Oe. S. Setae of the Oedeagus.  
 Oes. Oesophagus.  
 Op. Operculum.  
 Op. N. Optic nerve.  
 OV. TB. Ovarian tubules.  
 P. A. Prealare.  
 P. B. Post basalar.  
 P. C. Pump chamber.  
 Ph. M. Muscles of the pharynx.  
 PH. D. Pharyngeal duct.  
 Ph. V. Ventral wall of the pharynx.  
 Pi. Piston.  
 Pi. H. Handle of Piston.  
 Pi. M. Muscles of Piston 1-3.  
 Pl. Pleuron of the thoracic segments 2-3.  
 Po. Post-alare 2-3.  
 PR. Prothorax.  
 PR. C. Pronotal callosity.  
 PR. N. Prothorax notum.  
 P. S. Pump stem.  
 P. SC. Prescutellum of mesothorax.  
 P. S. Cox. Posterior sub-coxale 2-3.  
 P. SLQ. Post scutellum of mesothorax.  
 P. SSL. Fused prescutum, scutum, and scutellum of metathorax.  
 P. Th. N. Notum of the prothorax.  
 P. W. C. Posterior wall of the pump chamber.  
 RA. Radius vein of the forewing.  
 Rec. Rectum.  
 Ros. Rostrum.  
 Ros. Gr. Rostrum groove.  
 R. D. Reservoir duct.  
 S. B. Sub-basalar.  
 S. C. Suction canal.  
 S. cos. Subcostal.  
 Sc. Scutum of mesothorax.

S. D. Salivary duct.	Te. Testes.
S. G. Salivary gland.	Th. Theca.
SL. Scutellum of mesothorax.	Th. Sp. 1st and 2nd thoracic spiracles.
S. L. Superior laterale.	T. HO. Tentorium horn.
S. M. Suture membrane.	T. Tendon.
S Oes. G. Supra-oesophageal ganglia.	TR. Tarsus. [nae.
SP. Spiracles, one to ninth.	TR. AN. Tracheae to the antennae.
St. Sternum.	TRa. Trachea.
Sty. Stylets.	TROCH. Trochantin.
S. Sub. Oes. G. Supra- and sub-oesophageal ganglia fused.	TRO. Trochanter.
Sut. Sutures.	V. D. Vas deferens.
T. Tentorium.	V. N. C. Ventral nerve cord.
Tb. Tibia.	W. 1-2. Fore-and hindwing.
	W. B. Wing base.

## EXPLANATION OF PLATES.

## Plate I.

Fig. 1.—Dorsal view of the entire insect ♂.

## Plate II.

- Fig. 2.—ventral view of entire insect.  
 Fig. 3a.—Dorsal view of the thorax and abdomen.  
 3b.—Dorsal view of the head only.  
 3c.—Dorsal view of the thorax only.  
 Fig. 4a.—Lateral view of the abdomen and thorax.  
 4b.—Lateral view of the head and prothorax.

## Plate III.

- Fig. 5a.—The entire fore-wing.  
 5b.—The entire hind-wing.  
 5c.—The entire fore leg.  
 Fig. 6a.—Head dissected out—much magnified.  
 6b.—T.S. of the labium in the distal region.  
 6c.—T.S. of the stylets in situ.  
 6d.—Dorsal view of the base of the maxilla.  
 6e.—Ventral view of the base of the maxilla.  
 6f.—Apex of the maxilla.  
 6g.—Base of the mandible.  
 6h.—Apex of the mandible.  
 6k.—Lever of the mandible.  
 6l.—Apex of the labium.

## Plate IV.

- Fig. 7a.—Ventral view of the clypeo-labrum showing epipharynx.  
 7b.—Lateral view of the clypeo labrum and tentorium.  
 Fig. 8a.—Trans. Sec. of the head in the region of the brain.  
 8b.—Trans. Sec. of the head just in front of the brain.  
 8c.—Trans. Sec. of the head just where mandible begins.  
 8d.—Trans. Sec. of the head just where pump chamber begins.  
 8e.—Trans. Sec. of the head in the region of the clypeal folds.  
 8f.—Trans. Sec. of the head in the region where efferent salivary duct leaves the pump chamber.

Plate V.

- Fig. 9.—Salivary pump.  
 Fig. 10a.—Dorsal view of 6-10 abdominal segments.  
 10b.—Ventral view of 5-10 abdominal segments.  
 10c.—8th and 9th abdominal segments.  
 10d.—Oedeagus.  
 Fig. 11a.—Caudal view of the 6-10 abdominal segments, Female.  
 11b.— " " " 7-10 " " "  
 11c.— " " " 8-10 " " "

Plate VI.

- Fig. 12.—Alimentary canal.  
 12a.—Figure showing the valve between the oesophagus and the crop.  
 Fig. 13.—Salivary glands and pump apparatus.  
 Fig. 14.—Male reproductive organs.

Plate VII.

- Fig. 15.—Female genital organs.  
 Fig. 16.—Nervous system.  
 16a.—Lateral view of the central nervous mass.

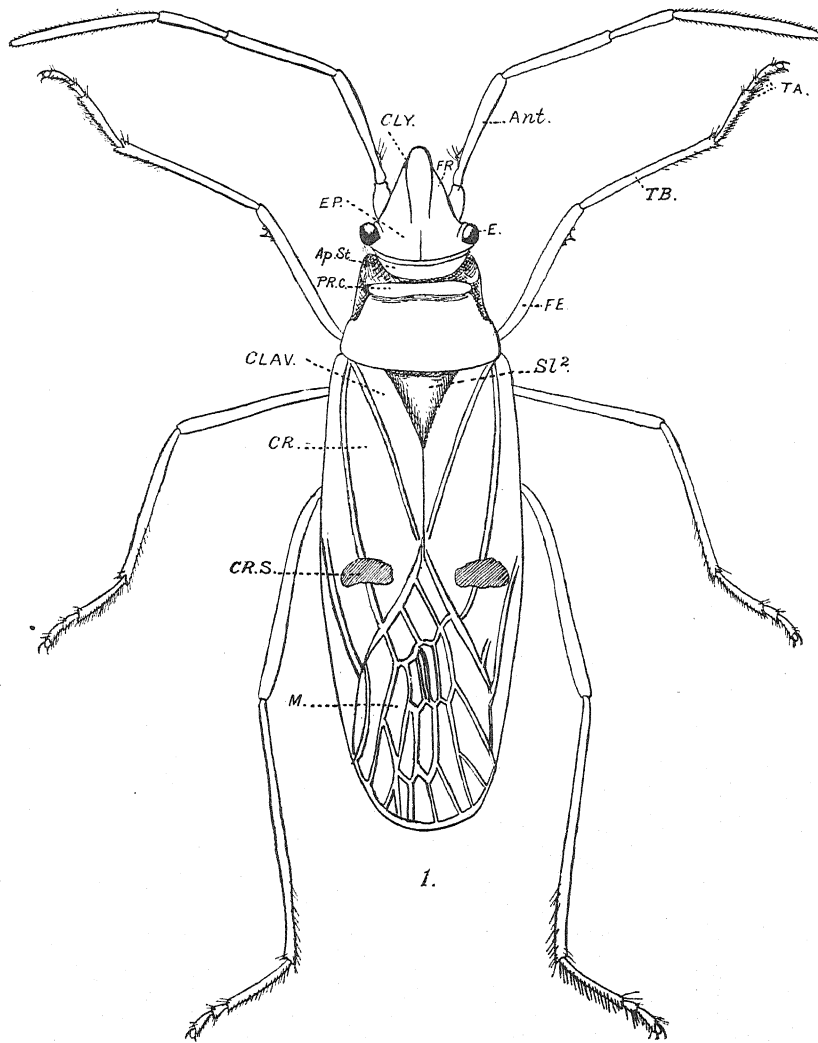
Plate VIII.

- Fig. 17a.—Entire Insect, right side of the diagram showing the dorsal tracheal system; left side showing the ventral tracheal system.  
 17b.—Division of a main trachea rising from an abdominal spiracle.  
 Fig. 18.—Stink glands.

Plate IX.

- Fig. 19.—Circulatory system.  
 Fig. 20a.—Egg.  
 20b.—Nymph 12 hours old.  
 20c.—After second moult.  
 20d.—After third moult.  
 20e.—After fourth moult.

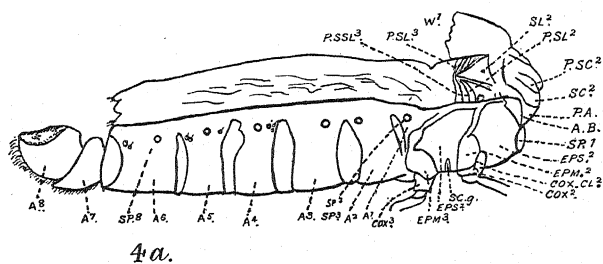
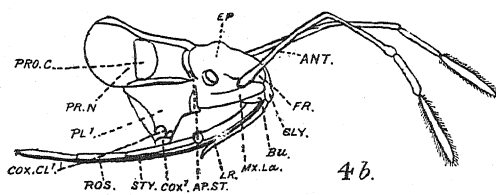
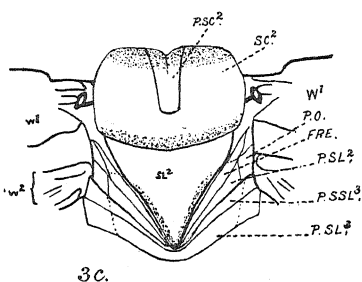
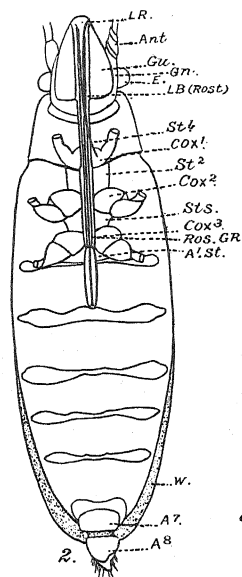
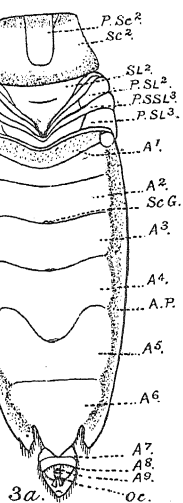
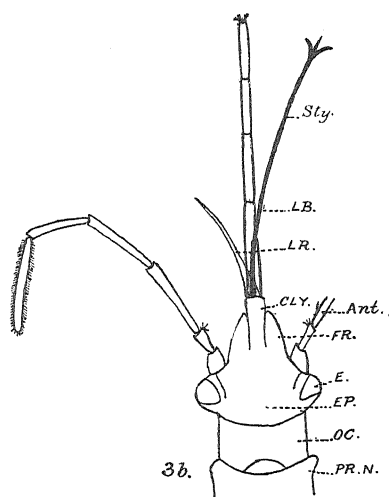
Mr. Hem Singh carried out the greater part of this work in the Zoological Laboratory of the Government College, Lahore. It was commenced in 1919 and the results were embodied in a dissertation which was submitted for the M.Sc. Degree of the Punjab University in 1920. The work was continued, with some intermission, at the Punjab Agricultural College, Lyallpur, where Mr. Hem Singh received valuable help and criticism from Mr. M. A. Hussain, Entomologist to Government, Punjab. In connexion with this research Mr. Hem Singh has had the advantage also of spending some months in the Laboratory of the Imperial Entomologist at Pusa (Bihar).—GEORGE MATTHAI, *Professor of Zoology, Government College, Lahore.*



H. Singh del.

Anatomy of the Red Cotton Bug.

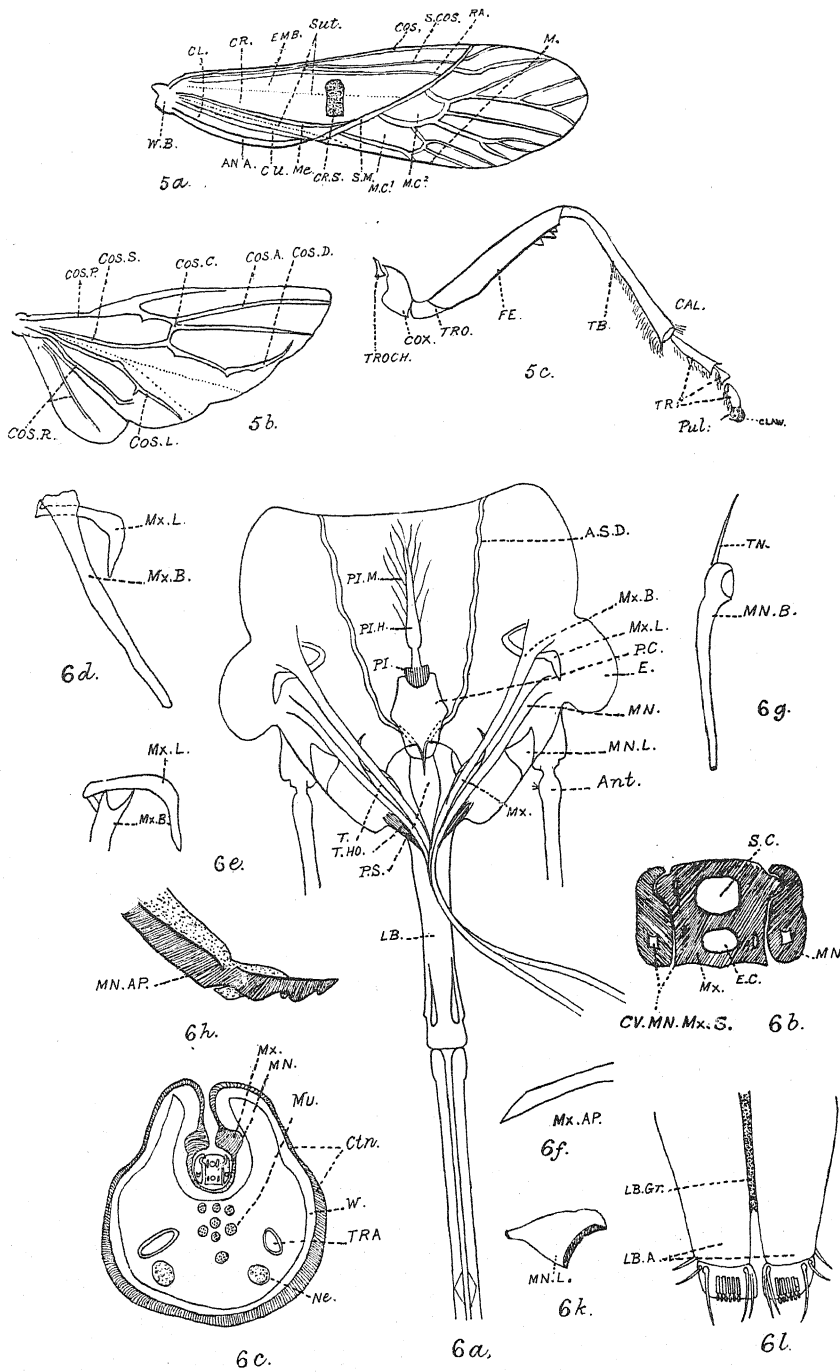




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Anatomy of the Red Cotton Bug.

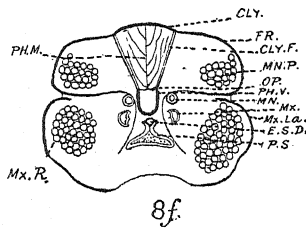
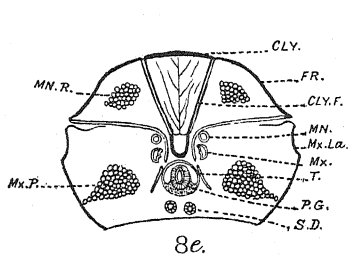
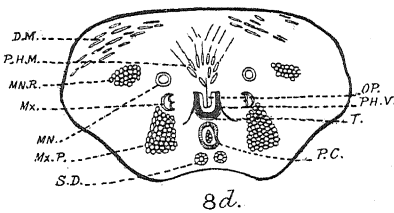
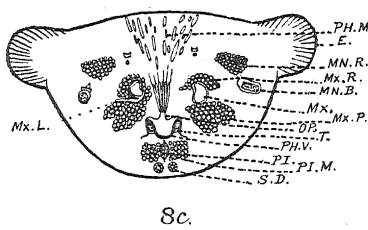
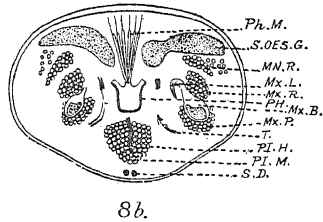
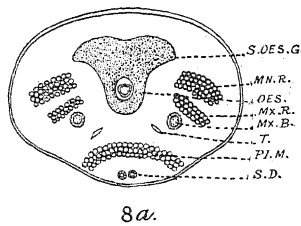
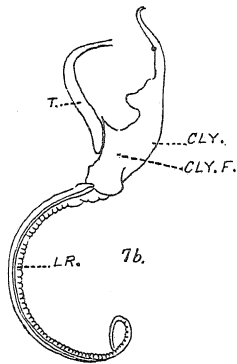
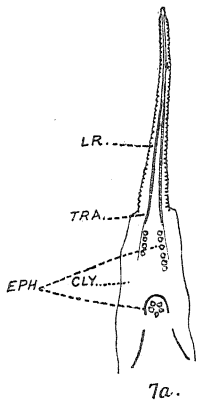




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Anatomy of the Red Cotton Bug.

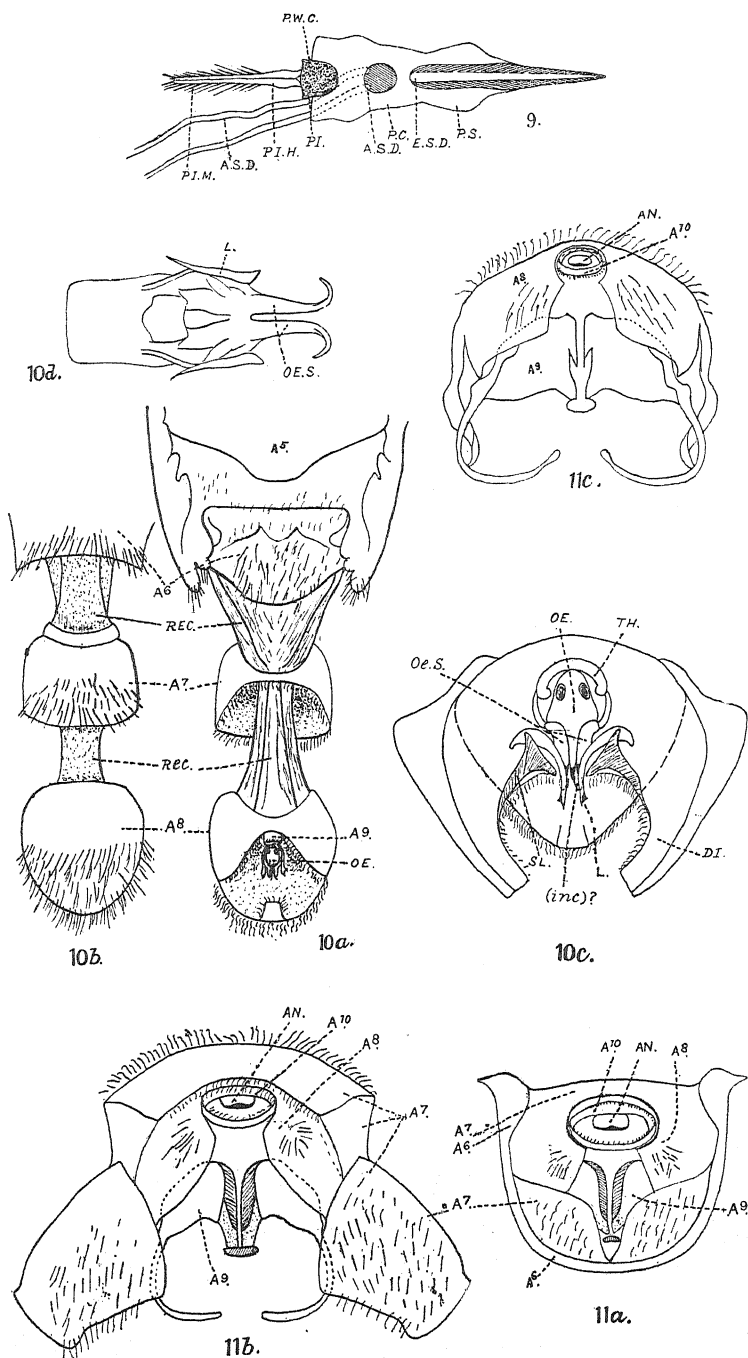




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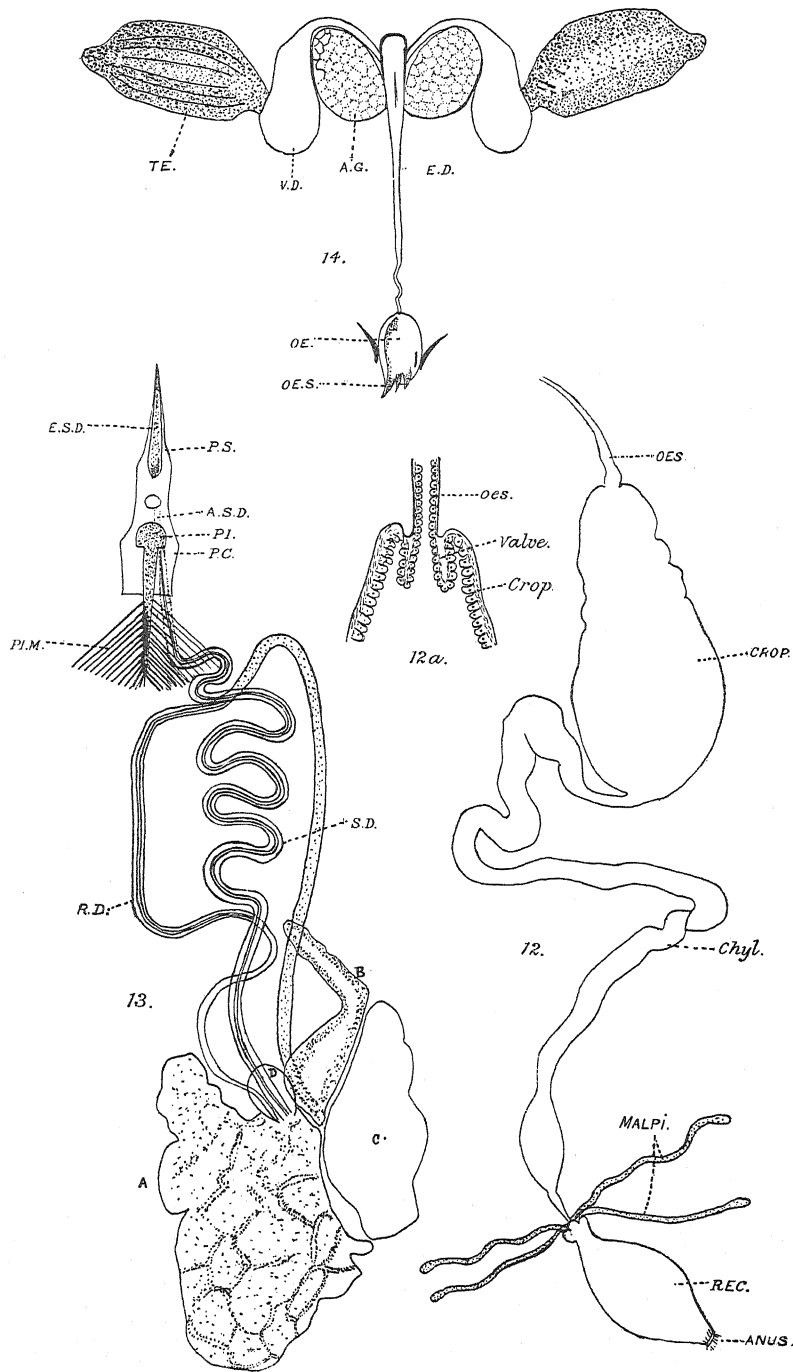




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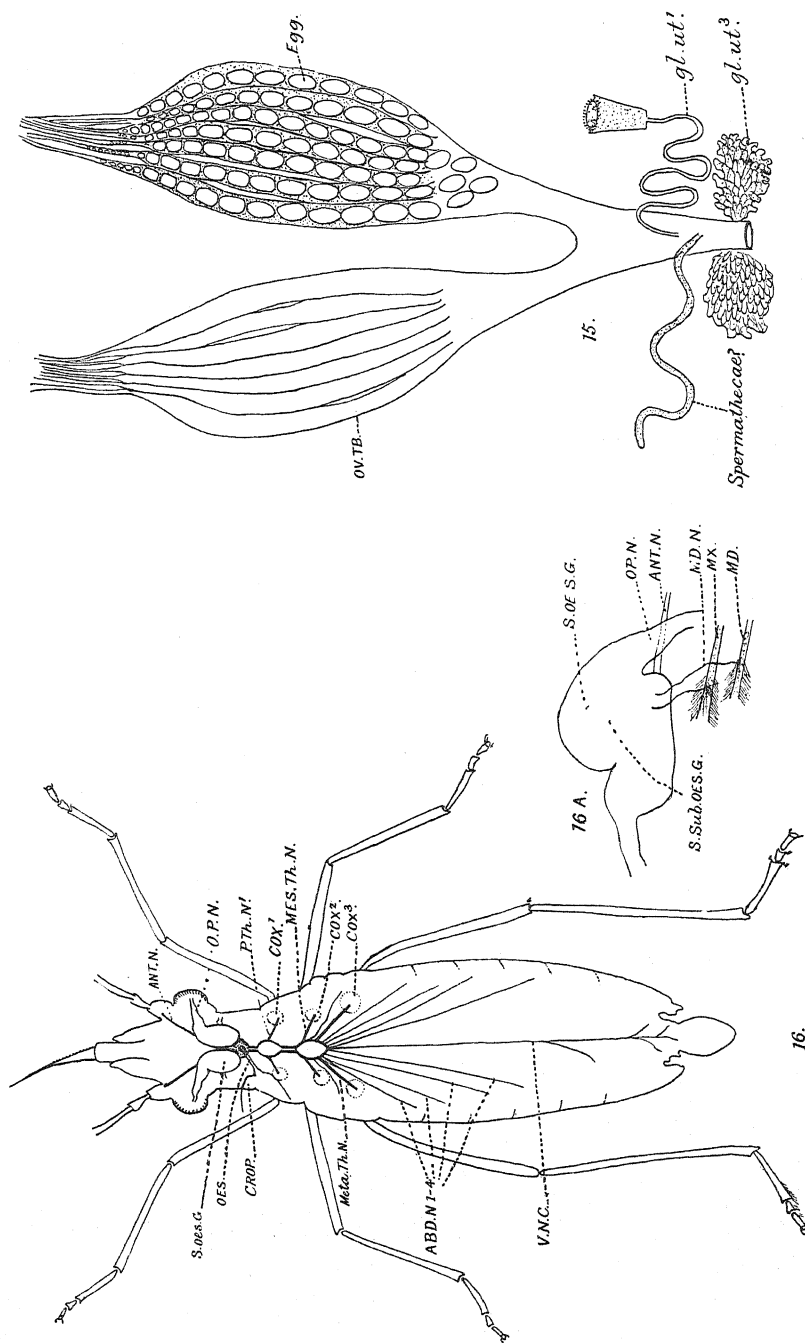




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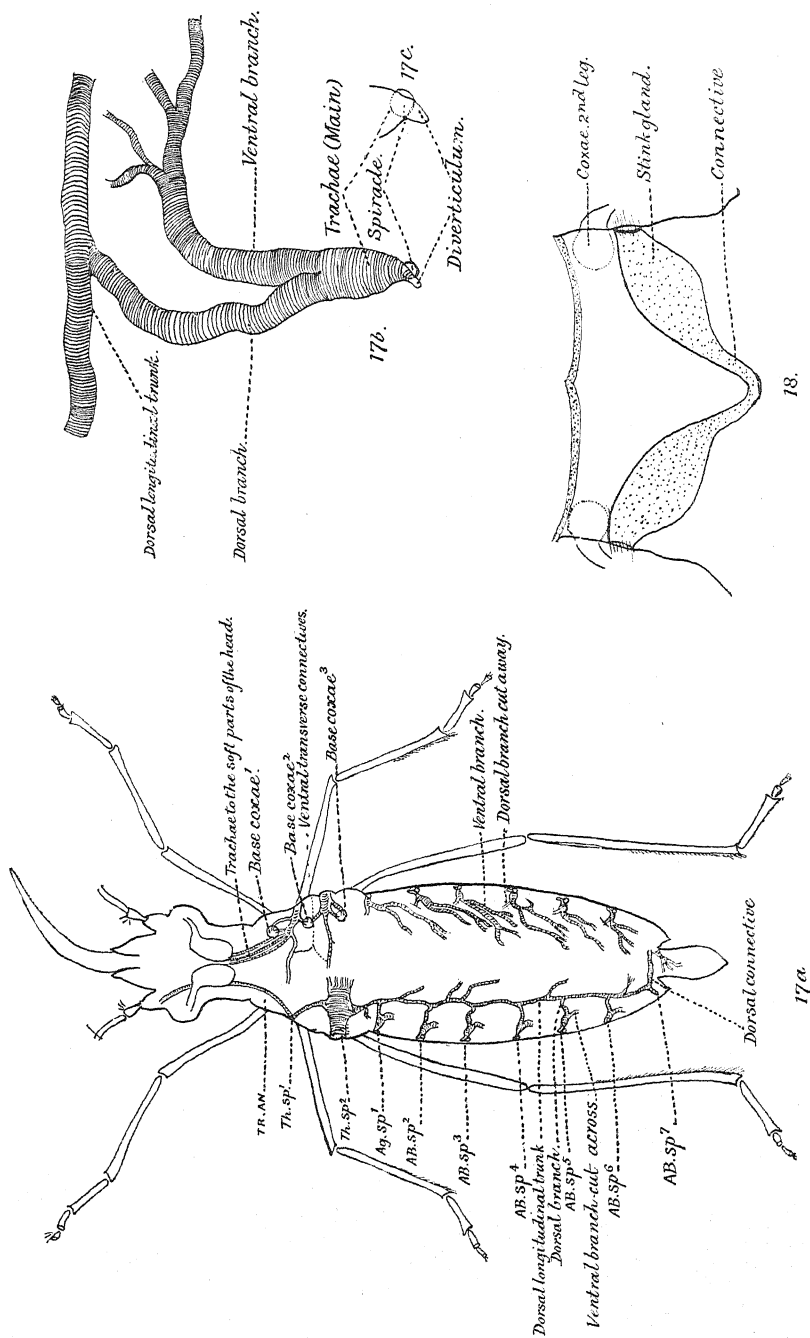




Anatomy of the Red Cotton Bug

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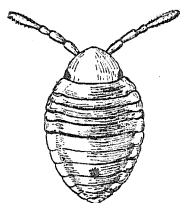
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Anatomy of the Red Cotton Bug

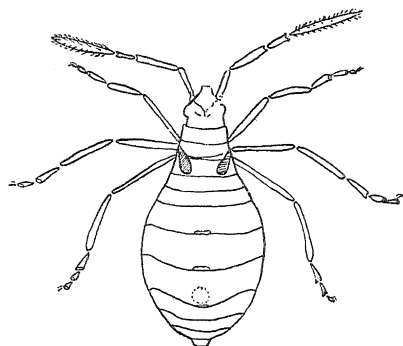




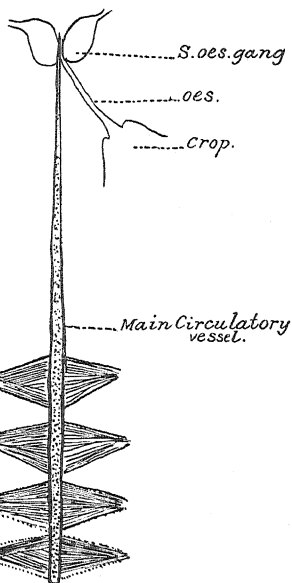
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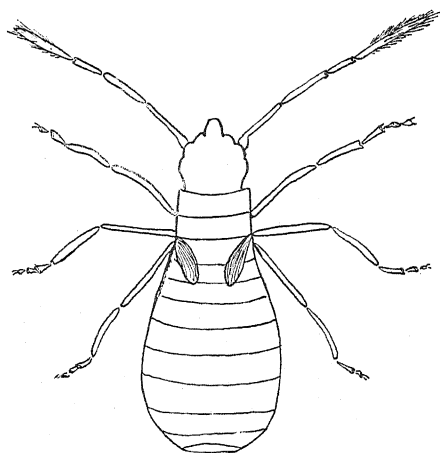
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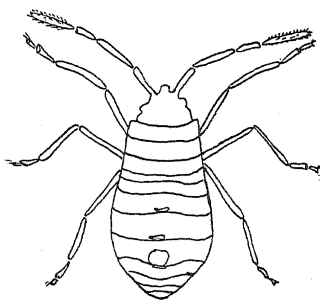
20d.



19.



20e.



20c.

H. Singh del.

Anatomy of the Red Cotton Bug.



**Proceedings**  
of the  
**Asiatic Society of Bengal**  
for 1922.

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*[Journal and Proceedings of the Asiatic Society of Bengal.]*





To

THE MEMBERS OF  
THE ASIATIC SOCIETY OF BENGAL.

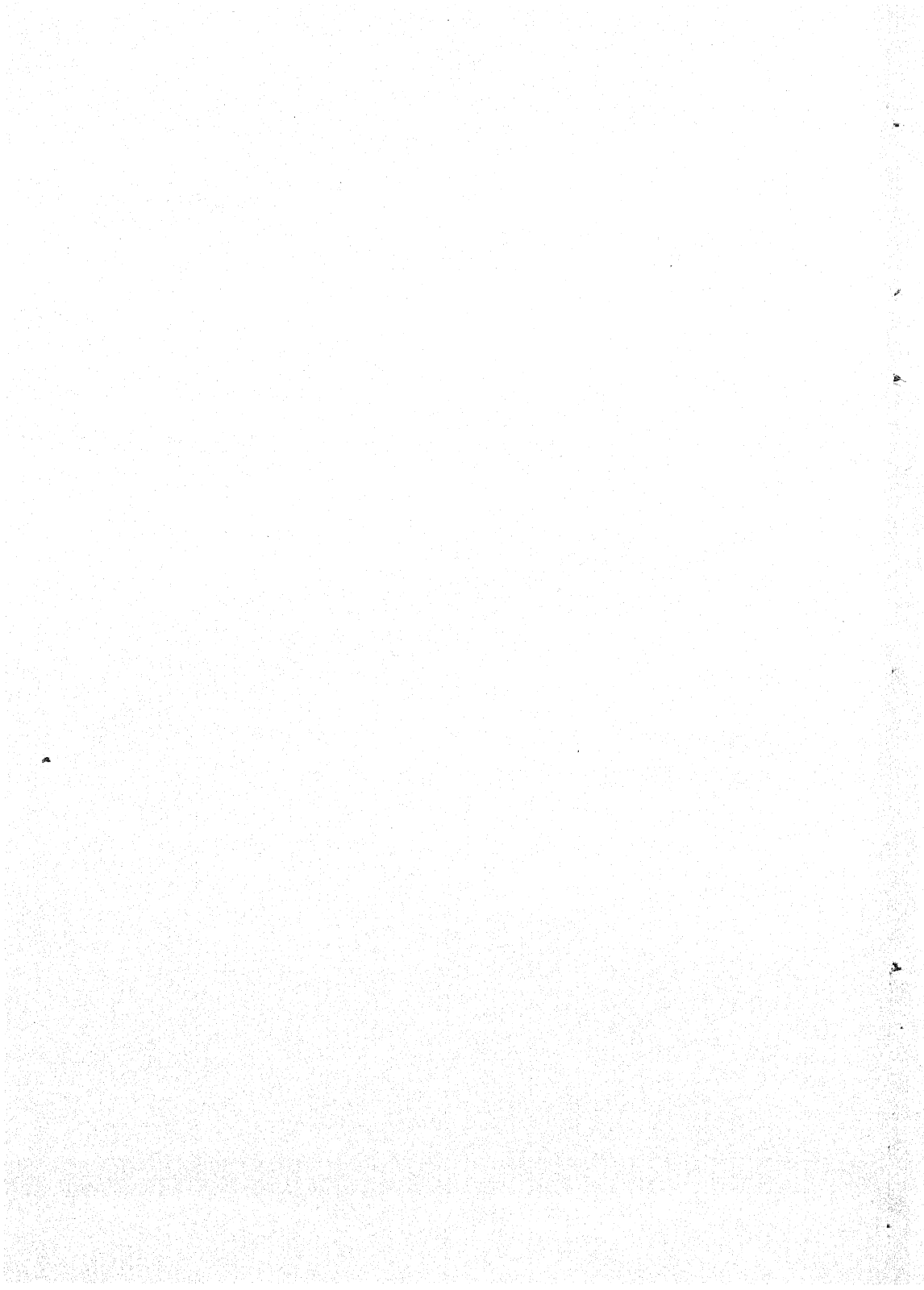
Members are once more requested to verify the correctness and completeness of all entries concerning them in this issue. Last year's revision has brought to light a great number of mistakes which have now been rectified. As, however, only part of the Members have responded to last year's request for corrections, it is presumed that mistakes still occur. Kindly indicate any such if observed on the form given over-leaf. Correctness and completeness of our entries are of considerable importance for our administration, as well as, occasionally, for the Members themselves.

ASIATIC SOCIETY OF BENGAL,  
1, PARK STREET,  
February, 1924.

JOHAN VAN MANEN,  
*General Secretary.*

N.B.—ONLY CORRECTIONS NEED TO BE NOTIFIED.

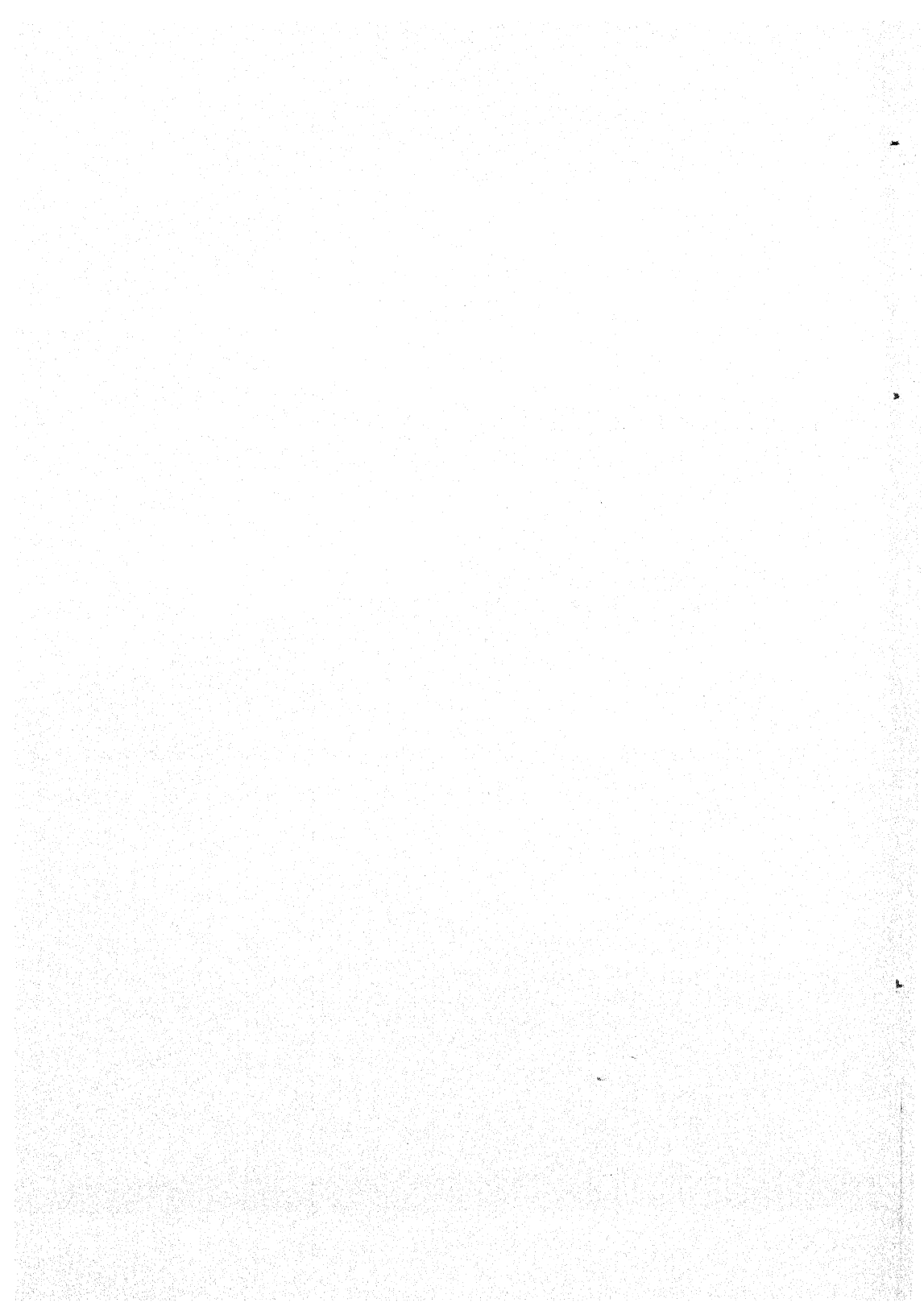
Family name, for alphabetical classification.	
Baptismal or other personal names, to follow.	
Titles.	
Address in full.	
Kind of ordinary Membership. Resident. Non-resident. Absent, Life-member Foreign Member.	
Date of Election.	
Special Membership or Fellowship. Honorary Fellow. Ordinary Fellow. Associate Member. Year.	
Distinctions. Elliott medal. Barclay medal. Year.	



# Proceedings, Asiatic Society of Bengal, 1922.

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## Proceedings of the Annual Meeting, 1923.

The Annual Meeting of the Asiatic Society of Bengal was held on Wednesday, the 7th February, 1923, at 9-15 P.M.

The HON'BLE JUSTICE SIR ASUTOSH MOOKERJEE, KT., C.S.I., D.L., D.Sc., F.R.S.E., F.A.S.B., President, in the chair.

### *Members present :—*

Abdul Ali, Mr. A. F. M.  
Abdul Latif, Syed.  
Abdul Wali, Moulvi.  
Agarkar, Prof. S. P.  
Annandale, Dr. N.  
Bose, Prof. S. R.  
Brown, Mr. J. Coggin  
Brown, Mr. Percy.  
Brühl, Dr. P. J.  
Chanda, Mr. R.  
Christie, Dr. W. A. K.  
Cleghorn, Miss M. L.  
Das-Gupta, Prof. H. C.  
Dikshit, Mr. K. N.  
Francotte, Rev. E.  
Ghatak, Prof. J. C.

Hannah, Dr. Bruce.  
Insch, Mr. J.  
Iyer, Prof. L. K. A.  
Jain, Mr. C. L.  
Kemp, Dr. S. W.  
Khuda Baksh, Mr. S.  
Majumdar, Prof. N. G.  
Manen, Mr. J. van.  
Moreno, Dr. H. W. B.  
Mukherjee, The Hon. Justice Sir Asutosh.  
Mukherjee, Babu Rama Prasad.  
Raman, Prof. C. V.  
Ray, Prof. H. C.  
Tipper, Mr. G. H.  
And others.

### *Visitors present :—*

Allen, Mr. and Mrs. G. T.  
Biswas, Babu Kalipada.  
Carsa, Mr. A. F. W. da.  
Dutta, Babu Atul Chandra.

Flemming, Mr. H.  
Sundarlingam, Mr. P. V.  
And others.

The President ordered the distribution of the voting papers for the election of Officers and Members of Council for 1923, and appointed Dr. B. Hannah and Dr. H. W. B. Moreno to be scrutineers.

The President also ordered the distribution of the voting papers for the election of Fellows of the Society and appointed Dr. B. Hannah and Dr. H. W. B. Moreno to be scrutineers.

The President announced that three papers had been received in competition for the Elliott Prize for Scientific Research for the year 1922. One of these was disqualified as not being in accordance with the terms of the Gazette Notification. The Prize was awarded to Mr. Abani Bhusan Datta, M.A., Ph.D.

The President announced that notification of the award of the Barclay Memorial Medal for 1923 would be made later.

The Annual Report was then presented.

## ANNUAL REPORT FOR 1922.

The Council of the Asiatic Society of Bengal has the honour to submit the following report on the state of the Society's affairs during the year ending 31st December, 1922.

### Member List.

The number of Ordinary Members at the close of 1922 was 369 as against 359 at the close of 1921. The number of Ordinary Members elected during 1922 was 28, of whom 9 have not yet paid their entrance fees, the number of Ordinary Members added is, therefore, 19. In addition 3 members elected in 1921 have paid their entrance fees during the year, making a total of 22 Ordinary Members added; on the other hand 8 withdrew, 1 died, and the name of one member was transferred from the Ordinary Member list to the list of Associate Members. The names of two members were transferred from the Ordinary Member list to the list of Honorary Fellows.

The number of Ordinary Members in the past six years were as follows:—

YEAR.	PAYING.				NON-PAYING.			GRAND TOTAL.
	Resident.	Non-Resident.	Foreign.	Total.	Life.	Absent.	Total.	
1917 .. ..	150	144	15	309	24	45	69	378
1918 .. ..	153	145	17	315	24	43	67	382
1919 .. ..	141	128	15	284	25	64	89	373
1920 .. ..	161	134	15	310	26	32	58	368
1921 .. ..	160	132	16	308	26	26	51	359
1922 .. ..	160	141	16	317	26	26	52	369

The following member died during the course of the year:—

Mr. Mansel Longworth Dames, I.C.S. (Retd.).

There were two deaths among the Honorary Fellows, viz. :—Mr. Charles H. Tawney, M.A., C.I.E. and Sir Patrick Manson, G.C.M.G., M.D., LL.D., F.R.C.P.

The number of Special Honorary Centenary Members remained unchanged, viz., 2. There was only one Associate Member elected, viz. Prof. Ananta Krishna Shastri. The number now stands at 13.

#### Fellows of the Society.

During the year we have elected Sir Thomas Henry Holland, K.C.S.I., K.C.I.E., D.Sc., A.R.C.S., F.R.S., F.G.S., F.A.S.B.; Lt.-Col. Sir Leonard Rogers, Kt., C.I.E., M.D., B.Sc., F.R.C.P., F.R.C.S., F.A.S.B., F.R.S., I.M.S.; Professor W. H. Perkin, Ph.D., Sc.D., LL.D., and Professor Arthur Anthony Macdonell, M.A., Ph.D., D.O.L., as Honorary Fellows. The number of Honorary Fellows is now 30.

At the annual meeting held on the 1st February, 1922, Babu Ramaprasad Chanda, B.A., and E. H. Pascoe, Esq., M.A., D.Sc., F.G.S., were elected Fellows of the Society.

Two members who were formerly fellows were elected Honorary Fellows during the year under review. —

Sir Thomas Holland, F.R.S. and Lt.-Col. Sir Leonard Rogers, F.R.S.

The list of Fellows, now stands at 39.

#### Office Bearers.

During the year Dr. S. W. Kemp officiated as Honorary Secretary in place of Dr. W. A. K. Christie, on leave in Europe. For some weeks Dr. Kemp was in Southern India and during this period Mr. A. H. Harley carried on the duties of the Honorary Secretary. In the absence of Mr. Harley for a short period Dr. E. P. Harrison took charge of the office.

There have been no other changes among the officers of the Society since last annual election.

#### Office.

At the beginning of the year Mr. J. H. Elliott fell ill and was allowed leave for six months on full pay from 15th February. On the 19th March he died after a career of honourable service to the Society extending over a period of forty years. The office and the Library were closed on the following day out of respect to his memory. The Council appointed Mr. C. Dover as Assistant Secretary on probation. Mr. Dover, after serving for a few months, submitted his resignation and Mr. J. C. Hyrapiet was appointed on probation in his place.

The Council allowed Mrs. Elliott to draw Rs. 312-8-0 per month up to 15th August and at the conclusion of the period made her a gratuity of Rs. 3,750.

There have been no other changes among the staff of the Society.

**Society's Premises and Property.**

It had been hoped that by the time this report came to be written the Council would have been able to announce their approval of a scheme for rebuilding the Society's premises, but although the Building Committee has been busily engaged throughout the year no final decision has yet been reached. Plans for a new building in every way suited to the Society's requirements were prepared by Messrs. Sudlow and Ballardie, but after protracted enquiry it was found that the scheme was too ambitious and that it was impossible to make the necessary financial arrangements. New proposals are, therefore, now under consideration. It is hoped that the Government of India will be able to provide accommodation in one of the Government of India buildings in Calcutta during the period of rebuilding.

**Indian Museum.**

No presentations were made to the Indian Museum.

The Director of the Zoological Survey of India was granted permission to send to the Victoria Museum, Karachi, certain duplicate specimens from the ethnological collections belonging to the Society.

During the year there has been no change in the Society's Trusteeship, the Hon. Justice Sir Asutosh Mukhopadhyaya, Kt., C.S.I., D.Sc., F.R.A.S., F.R.S.E., F.A.S.B., continuing to be the Society's representative on the Board of Trustees under the Indian Museum Act X of 1910.

**Indian Science Congress.**

The Ninth Annual Meeting of the Indian Science Congress was held in the Medical College, Madras, from January 30th to February 4th, 1922, under the patronage of His Excellency the Rt. Honourable Baron Willingdon of Ratton, G.C.S.I., G.C.I.E., G.B.E., Governor of Madras. Mr. C. S. Middlemiss, C.I.E., F.R.S., was President. The abstracts of the scientific papers communicated to the Congress are in the press and copies will shortly be sent to the members.

It was arranged that the Tenth Annual Meeting of the Congress should be held in the Medical College, Lucknow, on January 8th to 13th, 1923. His Excellency Sir William Marris, K.C.S.I., K.C.I.E., Governor of the United Provinces, consented to be Patron. Sir M. Visvesvaraya, K.C.I.E., M.Inst., C.E., D.Sc., was appointed President, and Dr. J. L. Simonsen, Ph.D., F.I.C., F.A.S.B., and Professor C. V. Raman, M.A., D.Sc., Honorary General Secretaries. Professor P. S. MacMahon, M.Sc., and Dr. Wali Muhammad, M.A., Ph.D., of the Lucknow University, were appointed Local

Secretaries, and the Hon'ble Mr. C. Y. Chintamani, Minister of Education, Chairman of the Local Committee.

#### **Meetings.**

The General Meetings of the Society were held regularly every month with the exception of the month of January when those present did not form a quorum. As the result of a ballot of members resident in Calcutta it was decided to alter the time of the General Meetings from 9-15 p.m. to 6-15 p.m. and there has been a marked increase in attendance since this change was introduced. No meeting was held in October, this being a recess month.

#### **Deputations.**

The Society received a communication from the Permanent Secretary of L'Académie Royale de Belgique, announcing the celebration of its 150th Anniversary on the 24th May, 1922. The Council appointed Dr. E. H. Pascoe, Sir Leonard Rogers, and Sir Thomas Holland as its representatives.

On an invitation from the President of the Société Asiatique de Paris, Dr. W. A. K. Christie represented the Society at the centenary celebrations held in July.

Dr. Christie also represented the Society at the International Convention in connection with the International Catalogue of Scientific Literature, held at Brussels in July.

The Society also received invitations from the University of Padua and the Hungarian Geographical Society and expressed its regret at not being able to send delegates.

The Society nominated Dr. E. H. Pascoe to represent it at the XIIIth session of the International Geological Congress.

#### **Agencies.**

Messrs. Luzac & Co., and Mr. Paul Geuthner have continued as the Society's Agents in Europe. The Controller, Local Clearing Office (Enemy Debts), Simla, having realised from Mr. Harrassowitz on behalf of the Society a claim totalling Rs. 2,442-14-1 Mr. Harrassowitz was re-appointed one of the Society's Continental agents.

#### **Barclay Memorial Medal.**

(No award for 1922.)

#### **Elliott Prize for Scientific Research.**

The subject selected for the Elliott Prize for Scientific Research for the year 1922, was Mathematics, and the notification

appeared in the *Calcutta Gazette*, in January 1922. Papers were received from three competitors, one of whom was disqualified as his thesis was not in accordance with the terms of the Gazette notification. The Prize is awarded to Mr. Abani Bhusan Datta, M.A., PH.D.

The subject selected for the Prize for the year 1923, is Chemistry. The notification will shortly be published in the *Calcutta Gazette*.

#### Finance.

The appendix contains the usual statements showing the accounts for the year 1922. In this year's account there is an additional statement under the head "Catalogue of Scientific Serial Publications, Calcutta." Statement No. 20 shows the Balance Sheet of the Society and of the different funds administered through it.

The credit balance at the close of the year is Rs. 2,13,868-4-2 against Rs. 2,14,171-0-4 on the 31st December, 1921. Of this amount Rs. 1,72,300 belongs to the Permanent Reserve, the working balance, exclusive of funds administered for Government, being Rs. 41,568 as against Rs. 42,571 at the end of 1921.

The Society has received the usual sanctioned grants of Rs. 18,800 and Rs. 5,000 from the Government of Bengal and India respectively as under :—

From Government of Bengal—	Rs.	Vide Statement
Anthropological Fund ..	2,000	No. 1
Oriental Publication Fund, No. 1	9,000	" 10
Do No. 2	1,000	" 11
Sanskrit MSS. Fund for printing, cataloguing and preservation of MSS. ..	3,200	} " 12
Bureau of Information ..	3,600	
<b>TOTAL ..</b>	<b>18,800</b>	

From Government of India—	Rs.	Vide Statement.
Arabic and Persian MSS. Fund ..	5,000	No. 13

Statement No. 14 contains an account of the Society's investments in Government Securities which are held in deposit by the Imperial Bank of India. We hold 3½ Government Promissory Notes of the face value of Rs. 273,700 The actual cost of the security was Rs. 262,606-3-10, but as the value of this security has considerably decreased during recent years, owing to the issue of more favourable loans, it

<sup>1</sup> An application has been made for a fresh grant of Rs. 3,000 to the Government of Bengal for another five years, the grant having expired on the 31st March, 1922.

has been thought desirable to write the Book Value down to the rates ruling at the close of the year and this has been done showing a loss of Rs. 103,830-3-10. We also hold 4% Government Terminable Loan 1915/16 of Rs. 10,100 purchased at par and the written value shows a loss of Rs. 202. In addition we have 3½% Government Promissory Notes of Rs. 500 belonging to the Barclay Memorial Fund and this paper also has been revalued.

Statements Nos. 15 and 16 show how the current Funds are temporarily invested in War Bonds and Treasury Bills.

Statement No. 17 gives an account of the amounts due to and from the Society by way of subscriptions, publications and contingent charges.

In Statement No. 18 is shown the sum reserved, with interest thereon, and kept in deposit with the Chartered Bank of India, Australia and China, London, for printing the Kash-miri Dictionary in London.

The Budget estimates for the year 1922 were:—Receipts Rs. 26,264, Expenditure Rs. 24,271. The actual receipts are Rs. 25,602-2-2, including the "admission fees," and the actual Expenditure Rs. 27,902-6-0, including "Publications" and "Gratuity" which were not provided for in the Budget estimate.

During the year we have received Rs. 672 from Admission fees, and as usual the Permanent Reserve has been increased by Rs. 700 (face value) transferred from the Temporary Reserve. The Permanent Reserve now stands at Rs. 1,72,300 (face value).

The Budget estimate of probable Receipts and Expenditure for the year 1923 is as follows:—

Receipts	..	..	..	Rs. 29,489
Expenditure	..	..	..	„ 23,340

#### BUDGET ESTIMATE FOR 1923.

##### Receipts.

	1922. Estimate.	1922. Actuals.	1923. Estimate.
	Rs.	Rs.	Rs.
Members' Subscriptions ..	9,000	6,883	9,000
Subscriptions for the So- ciety's <i>Journal and Pro- ceedings and Memoirs</i> ..	1,944	672	3,162
Sale of Publications ..	1,700	1,615	1,700
Interest on Investments ..	10,870	12,927	12,927
Carried over ..	23,514	22,097	26,789

	1922. Estimate.	1922. Actuals.	1923. Estimate.
	Rs.	Rs.	Rs.
Brought forward ..	23,514	22,097	26,789
Rent of Room ..	650	650	600
Miscellaneous ..	100	179	100
Government Allowance— for publication of papers in <i>Journal</i> ..	2,000	2,000	2,000
Admission fees ..	..	676	..
<b>TOTAL</b> ..	<b>26,264</b>	<b>25,602</b>	<b>29,489</b>

## Expenditure.

Salaries ..	8,502	8,627	7,435
Commission ..	600	444	600
Stationery ..	150	109	125
Pension ..	180	210	216
Light and Fan ..	200	131	150
Taxes ..	1,495	1,495	1,495
Postage ..	800	1,020	1,000
Freight ..	200	65	150
Contingencies..	400	509	400
Books ..	800	3,611	1,000
Binding ..	600	427	600
<i>Journal</i> and <i>Proceedings</i> and <i>Memoirs</i> ..	9,000	6,983	9,000
Indexes ..	200	..	200
Printing (Circulars, etc.) ..	500	685	200
Author's fee ..	250	250	250
Petty repairs .	50	107	50
Insurance ..	344	344	344
Publications ..	..	385	..
Gratuity ..	..	2,500	..
Winter clothing ..	..	..	125
<b>TOTAL</b> ..	<b>24,271</b>	<b>27,902</b>	<b>23,340</b>

We therefore anticipate a saving of nearly Rs. 6,150. Any expenditure for which provision has not been made might be met from the above surplus.

## Library.

The total number of volumes and parts of magazines added to the library during the year was 2,063, of which 268 were purchased and 1,795 were presented or received in exchange.

On an application to the Department of Education the library of the Society received two valuable presentations, viz. (1) A. Stein's "The Thousand Buddhas"; and (2) A. Stein's "Serindia" in 5 volumes.

Efforts are being made to procure missing parts or volumes of periodical publications existing in the Society's library.

#### Publications.

There were published four numbers of the *Journal* and *Proceedings* (Vol. XVII, Nos. 3 and 4, 1921, and Vol. XVIII, Nos. 1 and 2, 1922) during the year containing 487 pages and 10 plates in all.

Of the *Memoirs* three numbers were published (Vol. VI, Pt. 8, Vol. VII, No. 4, and Vol. VIII, No. 1), containing 164 pages and 9 plates in all.

The Proceedings of the Eighth Indian Science Congress is contained in the Society's *Proceedings*, Vol. XVII, No. 4, 1921.

Indexes to the completed volumes of the Society's *Journal* and *Proceedings*, and *Memoirs* are in active preparation, and will be published shortly.

On the recommendation of Dr. S. W. Kemp, Honorary Secretary, the Council decided that the price of the *Journal* be increased from Rs. 2 to Rs. 3, and that the price to non-members be Rs. 4; for the *Memoirs* the same increase, i.e. 50% extra for members and 100% extra for non-members.

#### Exchange of Publications.

During the year the Council accepted five applications for exchange of publications, viz. from (1) The Siam Society, Bangkok—the Society's *Journal* and *Proceedings* and *Memoirs* for their *Journal*; (2) The Military Geographical Institute of Florence,—the Society's *Journal* and *Proceedings* for their *L'Universo*; (3) the German Entomological Museum, Berlin—the Society's *Journal* and *Proceedings* and *Memoirs* for their *Mitteilungen*; (4) The School of Oriental Studies, London—the Society's *Journal* and *Proceedings* for their *Bulletin*; and (5) The Scientific and Industrial Research Department, London—the Society's *Journal* and *Proceedings* and *Memoirs* for their publications (for one year only).

#### Philology.

Mr. A. H. Harley has contributed a paper entitled "Dihyah-al-Kalbi." The paper deals with the life-history of 'Dihyah-al-Kalbi' which begins from the date of his conversion in 2 A.H. It contains various traditions according to which Gabriel is said to have impersonated him. There is a description

of his civil and military commissions with some conflicting traditions as to his transmission of the Prophet's letter calling upon the Emperor Heraclius to accept Islam. In it is also shown his domestic relation with the Prophet. Four traditions have been cited in it about the place of his tomb. It ends with two Hadith which were ascribed to him.

Another paper by Mr. Harley entitled "Umar bin Abdi-l-aziz and his Musnad collected by Al-Baghandi" deals with the life-history of 'Umar II and his Musnad as collected by Al-Baghandi. It is based on a rare MS. belonging to the Government Collection.

In a paper entitled "The Sources of Jami's Nafahat," Mr. W. Ivanow traces the sources of "Jami's Nafahat," which is one of the most important historical works in Persian, and has exercised a great influence on Persian Sufic Literature. The work is based on some rare MSS. in the Society's possession. "An Old Gypsy Jargon" by the same author contains a note on a fragmentary MS., dealing with an artificial and conventional secret code of a darwish community.

A number of papers dealing with varied aspects of philology were read by the members of the Society. Most of these have been or will be published in the *Journal*. So far as archaeology is concerned papers relating to Bharhut Sculptures contributed by Mr. Ramaprasad Chanda and Dr. M. M. Barua, are important. There can be no doubt that most of the identifications of these sculptures with the Buddhist Jatakas will be accepted by scholars. Very little attention has been devoted to the study of Kharosthi Inscriptions and the publication of a paper on two epigraphs by Mr. N. G. Mazumdar is therefore welcome. Dr. Roychowdhury's article on "the Mahabharata and the Besnagar Inscription of Heliodoros" will be found instructive.

The linguistic side of Philology was not neglected this year, and in "Lakhimpuri: A Dialect" Baburam Saksena has made a valuable contribution to our knowledge. Father H. Hosten's article on St. Thomas also deserves notice as it throws interesting light on Pre-Portuguese Christianity of India. Tibetan studies were not forgotten and Mr. Johan van Manen's article entitled "A contribution to the Bibliography of Tibet" cannot fail to be of great use to Tibetan scholars.

#### **Anthropology.**

Four papers of Anthropological interest have appeared in the *Journal and Proceedings* of 1922. In a paper entitled "The Origin of the Catholic Christians of Eastern Bengal" (Contributions to the History and Ethnology of North Eastern India—III) Mr. E. A. Stapleton discusses the names of 60 Christian children in the school attached to the Portuguese Church

at Hussainābād (Hashnābād) in the Nawabganj Thana of Dacca District and from the occurrence of Bengali *dāknāms* or customary names of address and also of names of father's *bāri* (homestead) instead of surnames arrives at the conclusion "that in the great majority of instances the Christians of Hashnābād are not descended from Portuguese at all but are merely converts from Hinduism and Islam." Dr. James Wise's valuable historical account of "Portuguese in Eastern Bengal" is printed as an appendix (II) to the paper with additional notes bringing the history up to date. In his paper on "The Svastika and the Omkāra" Mr. Harit Krishna Deb endeavours to show that there are indications enabling us to identify the symbol (*svastika*) with the syllable om. In the paper entitled "Pre-historic writing in India and Europe" Mr. Pañchānan Mitra traces the Indian Brāhmī alphabet to Archaic (*Proto-Egypto-Greco-Indic*) writing. The most interesting anthropological paper of the year is Mr. Johan van Manen's article entitled "Concerning a Bon Image" which he recognises as the Bon-po deity Gsang-ba allied to Rta-mgrin and connected with the Garuda.

#### Zoology.

Eight papers on zoology have been published in the *Journal* and one in the *Memoirs*, as well as a number of abstracts in the report of the Eighth Indian Science Congress published in the *Proceedings*.

The paper in the *Memoirs* deals with the Amphipod Crustacea collected by Dr. N. Annandale in the Far East in 1915-1916 and is by Dr. W. M. Tattersail, late Keeper of the Manchester Museum. It contains descriptions of several new species some of which are of great geographical interest.

Of the papers published in the *Journal* by far the longest and the most important is that on the "Renal Portal" System and Kidney Excretion in Vertebrata by Dr. W. N. F. Woodland, late Professor of Zoology, Muir Central College, Allahabad. This paper occupies over 100 pages and embodies the result of most careful and detailed work undertaken mainly in the Muir Central College, Allahabad.

Most, if not all, of the other papers in the *Journal* were originally read at a meeting of the Indian Science Congress and are of the nature of preliminary notes or short abstracts of longer memoirs published elsewhere.

Mr. Cedric Dover's "Resumé of Recent Progress in our Knowledge of the Indian Wasps and Bees" is a useful compilation.

#### Botany and Palaeontology.

No papers dealing exclusively with botanical or palaeontological subjects have been published, but Dr. N. Annandale's

"Introduction to the Study of the Fauna of an Island in the Chilka Lake" in the *Memoirs* consists mainly of an account of the vegetation, palaeontology and geology of the island. Mr. V. Narayanaswami and Dr. H. G. Carter contribute a list of plants as an appendix to this memoir.

### Physical Science.

No papers on Physical Science were published during the year under review.

### Medical Section.

Eleven meetings of the Medical Section were held during 1922, and were very well attended, the average attendance being 9 members and 29 visitors.

In January Major R. Knowles, I.M.S., read a paper on "The Problems of Kala Azar," fully illustrated by lantern slides and dealing especially with the unsolved problem of the transmission of the disease. In February, Lt.-Colonel F. P. Connor, D.S.O., I.M.S., read a paper on "Malignant Growths of the Retained or Imperfectly Descended Testis," Rai Dr. U. N. Bramachari Bahadur, F.A.S.B., one on "A New Form of Cutaneous Leishmaniasis—Dermal Leishmanoid," and Dr. J. J. Campos one on "Biochemical Aspects of Cholesterin." Dr. Bramachari's discovery of a new and very remarkable disease—a universalised and cutaneous infection of the whole skin of the body by *Leishmania donovani*, with lesions resembling those of nodular leprosy in clinical type,—has led to renewed research work upon kala azar transmission. In March, Major H. W. Acton, I.M.S. read a paper "On the Isomeric Relationships of the Cinchona Alkaloids and their relative Therapeutic Values," in which he summarised five years of remarkable research work upon the malaria problem by himself and his collaborators; and Dr. Bramachari one "On the Influence of the Acidic and Basic Radicles of an Antimonyl Compound upon the Toxicity of its Antimony Content," with special reference to the introduction of new compounds in the treatment of kala azar. In May, Dr. C. A. Bentley read a paper "On the Economics of Bengal Malaria," fully illustrated by lantern slides. In June, Dr. E. Muir read a paper on "Recent Advances in our Knowledge of and Treatment of Leprosy," illustrated by lantern slides. In July, Major J. A. Shorten, I.M.S., read a paper on "Diathermy, its History and Use in Medicine and Surgery." Major Shorten's paper was illustrated by exhibits of apparatus and experiments.

At the August meeting Major A. D. Stewart, I.M.S., read a paper on "Tube Wells in Bengal." Major Stewart's paper has led to correspondence with the Madras Government, who are desirous of testing such methods. A paper was also read by

Major H. W. Acton, I.M.S., on "The Causation of the Epidemic Dropsy of Bengal"; and the interest taken in Major Acton's recent discoveries of amine-forming micro-organisms in the infected rice which is concerned in the production of the disease was shewn by an attendance of 45 Calcutta practitioners and a lively discussion. In September, Dr. Bramachari read a paper on "Further Biochemical Researches in Kala Azar and a new Globulin Test," Major R. N. Chopra, I.M.S. and Major H. W. Acton, I.M.S., a joint paper on "The Nature, Production and Action of the Toxin of the Cholera Vibrio," and Major W. L. Harnett, F.R.C.S., I.M.S., one on "A Case of Traumatic Aneurism of the Spleen." The isolation by Majors Acton and Chopra from cultures of the cholera vibrio of the cholera amine in a state of purity has been followed by the experimental production of every symptom and lesion of cholera in experimental animals by injections of the purified amine, freed from all bacteria. In October, Lt.-Colonel F. A. F. Barnardo, C.I.E., C.B.E., I.M.S., read a paper on "The Management of Typhoid Cases with a note on the Causation of Haemorrhage in the Enteric Fevers." In November, Major H. W. Acton, I.M.S., read a paper on "The Mode of Action of Selective Drugs." In December, Major R. N. Chopra, I.M.S., and Dr. Birendranath Ghosh, M.Sc., read a paper on "The Field for Research into Indian Indigenous Drugs," and Dr. Bramachari one on "Some New Amino-Antimonyl Tartrates and their Therapeutic Value." The meeting was attended by many of the leading kabirajs of Calcutta and the paper by Major Chopra and Dr. Ghosh was followed by an interesting discussion.

The Section, as now constituted, affords a common meeting ground for workers at the Calcutta School of Tropical Medicine and Institute of Hygiene, the Calcutta Medical College, the Presidency General Hospital, and the general body of medical practitioners in the city.

#### Catalogue of Sanskrit MSS.

Of this Catalogue which is being prepared by Mahamahopadhyaya Haraprasad Shastri, C.I.E., a considerable amount of material has already been printed off and it is hoped that the first volume will be issued in a few months' time.

#### Arabic and Persian Manuscripts, Search and Catalogue.

During the year 1922, fifteen Arabic and Persian MSS. were purchased on behalf of Government.

The preparation of the Catalogue of the MSS. in the Government Collection on the lines of the Catalogue of two Collections of Arabic and Persian MSS. preserved in the India Office Library by Sir E. Denison Ross and Professor E. G.

Browne is in progress. The Acting first and second Travelling Maulawis were engaged in this work throughout the year. Besides this they prepared notes on the MSS. offered for sale, and prepared a Hand-list of the MSS. purchased during the years 1916-21. The first Additional Travelling Maulawi was engaged in foliating the Persian MSS. of the Society's Collection. He resigned in the month of December. The second additional Travelling Maulawi was engaged in preparing the Catalogue of the Arabic MSS. of the Society's Collection.

#### **Bibliotheca Indica.**

Sanskrit Series. During the year the Society published.

(1) Baudhayana Śrauta Sūtram, Vol. III, Fasc. 4; (2) Prithvirāja Vijaya, Fasc. 3; (3) Kṛtya Ratnakara, Fasc. 2; (4) Advaitachīnta Kaustubha, Fasc. 4; and (5) Tattva Chintamani Dīdhiti Vivṛiti, Vol. 3, Fasc. 2.

Arabic and Persian Series. In this series two parts were published: (1) Muntakhabu'l-Tawārīkh (English translation), Vol. III, Fasc. 4; and (2) Tayyibat-i-Sa'di, Fasc. 3.

#### **Coins.**

No papers on Numismatics were published during the year under review.

THE HON'BLE JUSTICE SIR ASUTOSH MOOKERJEE, K.T.,  
C.S.I., D.L., D.Sc., F.R.S.E., F.R.A.S., F.A.S.B., President,  
delivered an address.

### **ANNUAL ADDRESS, 1922.**

GENTLEMEN,

It has been my privilege to address the Society, at its annual gathering, so often during the last seventeen years, that my silence on the present occasion would not have been liable to be misinterpreted as disrespect to our distinguished members. I felt, however, that if the term of office of the President were brought to a close without an address, however brief, it might create an unwelcome precedent. I shall consequently ask your indulgence while I refer to one or two subjects of interest to all well-wishers of the Society and supporters of its activities.

It is a matter of congratulation that notwithstanding the stress of economic conditions, our material prosperity has remained unabated during the last twelve months. There is no visible diminution in the number of our members, nor has there been a fall in the quantity, and, let me add without hesitation, the quality of the communications accepted by us for publication. To our keen disappointment, however, our building scheme has been held up, by reason of financial difficulties, just at the stage when we hoped that they had been successfully overcome, and it is now fairly clear that the matter requires to be explored further. In connection with this project for the erection of a handsome building on this site, a gentleman, who may well claim to be a man of culture but who has not yet joined the Society, has seriously put to me the question, whether the Society which has now existed for 140 years and has occupied these premises erected more than a century ago, is likely to last during the normal lifetime of a new habitation. I assured him, with my usual optimism, that the work of the Society would never come to an end, for had not our illustrious Founder, with the boldness which characterised all his conceptions, defined the bounds of our investigation to be the geographical limits of Asia and included within the scope of our enquiries whatever is performed by man or produced by Nature. It is, I venture to think, not generally realised, even by well-educated people, that problems of scholarship, both literary and scientific, which still await solution, are so numerous and so fascinating that a Society like this can never languish. It is of the problems in one of these fields alone that I shall venture to address you

this evening—I mean the achievement of scholars of different nationalities in the domain of Indology.

The greatest work in this department, which is also the greatest event of the year just closed, is the publication of the first volume of the long projected and keenly expected Cambridge History of India, the first of a series of six, setting forth the history of ancient India from the earliest times to about the middle of the first century of the Christian era. A glance at this work suggests many ideas for our reflection. In 1839, when Mount-stuart Elphinstone first attempted a comprehensive History of India, he remarked: "No date of a public event can be fixed before the invasion of Alexander, and no connected relation of the national transactions until after the Mahomedan conquest." The first part of this statement is still true, if it is strictly taken to mean that no date of an historical event anterior to the invasion of Alexander can be determined with absolute precision. But the second part of his observation has lost all point in the light of the wealth of materials now available for the reconstruction of the ancient history of this country; and even in respect of the pre-Alexandrian period, "connected relation" is possible and has been established in the case of at least the social and religious history of India.

But what is this wealth of materials accessible to us, you will perhaps ask, which have made the reconstruction of our past history possible? Briefly, they are the literary compositions and the archaeological monuments. So far as the first of these sources goes, there can be no doubt that we have made much headway in the publication of the literary compositions of ancient India. Thanks chiefly to the industry and devotion of European scholars, almost the whole of Vedic literature is now before us for study and utilisation for historical purposes. All the important works of Pali Buddhism are now accessible to us for the same purpose, principally through the unflagging and disinterested efforts of the late Professor Rhys Davids, who has just passed away, to the extreme grief of scholars in all countries. In regard to later periods, the publications brought out in such series as the Bibliotheca Indica of our Society, the Bombay Sanskrit and Prakrit series, the Kavyamala, the Vizianagram series, the Benares Sanskrit series, the Chaukhamba series, the Trivandrum Sanskrit series, the Harvard Oriental series and the like, have placed before us much material which can be easily utilised in the exploration of the ancient history of India. I do not for a moment intend to imply that no further work remains to be done in the matter of such publication; all that I intend to emphasise is that much progress has been achieved in this direction. Such is not, however, the case with the collection and study of archaeological monuments, which, as I have

already told you, is another important source of our past history. These fall into four broad divisions, (1) Epigraphy, (2) Numismatics, (3) Iconography and (4) Art and Architecture. Notable advance has doubtless been made in the study of these sources during the last half a century, as I attempted to show in my Address to the Second Oriental Conference held last year in this city under the auspices of the University of Calcutta. But it must be conceded that much still remains to be accomplished in this direction. Even in the sphere of Epigraphy, which may create the impression that the field has been thoroughly exploited, if we look into the Government Epigraphist's list of inscriptions discovered in the Madras Presidency alone, we are constrained to admit that numbers of them still await to be deciphered and made accessible for the purposes of history. The same remark may be applied with even greater emphasis to each of the other branches of Indian Archæology.

The materials which have been critically handled by different scholars and archæologists are now within the reach of the historian. He has but to digest and collate them, to requisition them into the service of History. It is an elementary truism that the life of a nation is faithfully portrayed in the monuments of its literature; here, as elsewhere among all civilised people, it is indisputable that our literary compositions illuminate many a dark and obscure corner in our past history, and their importance can scarcely be over-rated specially for our earliest period. The history of the pre-Asokan times in all its aspects still rests practically on literary evidence. It is true that the bulk of this literary source is preponderantly religious. But we have such secular works as the Puranas and the Epics which have helped to preserve the historic tradition. The results obtained by a scrutiny of this tradition, specially when compared and contrasted with those reached by a study of Vedic literature, throw unexpected yet welcome light on the political history of that period. The fruit of such a critical inquiry is now before us in the shape of a book entitled "Ancient Indian Historical Tradition" brought out by Mr. F. E. Pargiter whose name occupies an honoured place in the long roll of Presidents of this Society. The idea of such a work had been conceived by him thirty years ago, when he was engaged on the translation of the Markandeya Purana, undertaken by him for this Society. It is also extremely gratifying to note that a work of exactly the same nature was submitted in 1921 by Mr. Sitanath Pradhan, Lecturer on Physics in the Murarichand College, Sylhet, for the Degree of Doctor of Philosophy, although he himself was presumably a votary not of philosophy, but of science. The thesis has been pronounced by experts to be of much excellence and has been accepted by the University for immediate

publication. A comparison of the divergent results obtained by Mr. Pargiter and Dr. Pradhan cannot but prove useful for the reconstruction of the political history of the pre-Mauryan period. It cannot thus be questioned that the Vedic and Post-Vedic literature, inclusive of the Pali Buddhist Canon, contain valuable materials for the investigation of the social, economic and religious history of that period; this, indeed, is now admitted on all hands and calls for no detailed comments. Such then is the value of the literary source, specially for the pre-Mauryan period, where archaeological monuments cannot come to our aid, though no doubt, when the latter become accessible, our knowledge attains further precision and becomes better connected. But even these records, though they have been judiciously handled by archaeologists, stand in need of examination also by the artist and the historian before they can be made to yield the ancient history of India. Take for instance the field of numismatics. So many different coins of different periods have been found, classified and catalogued by expert numismatists, that many might labour under the impression that whatever was possible had been achieved. But the moment the records are studied and handled from the historian's point of view, they yield many interesting results. I need make only a passing reference to the ancient history of coinage, such as we have seen already narrated in the lectures delivered in 1921 by the Carmichael Professor of the Calcutta University. Take, again, the ancient art and architecture of India. Vincent Smith's "History of Fine Art in India and Ceylon" and Fergusson's "History of Indian Architecture" are still looked upon as the standard works on the subjects. The authors of these publications, however, never professed to give exhaustive descriptions of all the types of Indian art and architecture; these treasures are indeed inexhaustible, and new specimens are brought to light year after year, thanks to the energy of members of the great Archaeological Survey, as also to the enthusiasm of private citizens. It is not for this reason that these pioneer works were considered to be the standard authorities, but rather because they were taken to have expounded the grounds and principles of Indian art and architecture. We are indebted, however, to the striking efforts made by Mr Havell, that we are now able to approach the subject from an entirely new angle of vision; the consequence is that the works of Fergusson and Vincent Smith are criticised as dominated by the erroneous idea that the art and architecture of Ancient India *qua* art has very little to teach the world. It is refreshing to find that the workers of this generation have now commenced studying the problems of Indian art and architecture from this new point of view, which is not that of the archaeologist, but of the artist. It was only the other day that Dr. Stella Kramrisch delivered two courses of lectures before the

Calcutta University, setting forth some of the results reached by her in this field. Mr. Manomohan Ganguli, author of "Orissa and its Remains," is also delivering a series of lectures, under the auspices of the University, on the architecture of ancient India from this view-point; while Mr. Sen, Jamini Kanta, in his brilliant work "Art-o-Ahitagni" has expounded an attractive theory. No impartial critic can, for a moment, lay down that this new method of treatment is wholly correct—I am not pledged to accept either the old or the new; indeed, to my mind, both the old and the new contain elements of truth, and unless the partisans of both thresh out the subject thoroughly, we cannot hope to reach the unalloyed truth.

It will thus be admitted that the labours of scholars working in various fields have brought to light a vast mass of material since the time when Elphinstone first attempted to write a history of India, as will be apparent from even a cursory glance at the pages of the first volume of the Cambridge History. We must not overlook, however, that the magnitude of the task is so great that a work of this character could have been rendered feasible only by the co-operation of a band of scholars who are researchers and experts in the different branches of Indology. It is only by this co-operative method that it is possible to compose a work which can be treated as an authority on the history of ancient India. If we wish to realise how progress has been made by immense strides in quite recent years, we need only recall the history of ancient India by Vincent Smith, which was rightly acclaimed on its first appearance as a distinct step forward, though scholars were not slow to recognise its obvious imperfections and inevitable limitations. It was, however, readily acknowledged as a helpful advance over what had preceded, and it was in fact entitled to unreserved credit as the first systematic attempt to compress a bewildering mass of materials of the most diverse character into a fairly well-connected narration.

I have hitherto referred specifically only to such materials, literary and archaeological, as have been discovered within the geographical limits of India. But it is manifest that one cannot ignore the wealth of materials which abound in what was in ancient times rightly regarded as a greater India. It would be folly to overlook the remains of Indian Civilisation in the world around India and the ineffaceable traces of her vitalising intercourse in ancient times with her neighbours, such as Persia, Central Asia, China, Tibet and Indo-China. No student of Ancient Indian History and Culture can ignore, for instance, the materials brought to light by that intrepid explorer Sir Aurel Stein, whose latest work "Serindia" has added notably to his many triumphs as a path-finder in trackless regions where Indian Culture flourished in ages gone by. This manifestly adds to the immensity of the work which

lies before the investigator of this generation. In this connection, we cannot afford to ignore the fundamental position that the history of a nation is not merely a chronicle of its political events, but comprehends equally every important development in the domain of religious, social and economic life. It is no reproach to the Cambridge History that from this standpoint it has not realised our highest conception of historical work. One of the greatest achievements of the nineteenth century was the application of scientific methods to historical studies, so that History may be regarded as teaching a continuous sequence, an inflexible order, an eternal law of progress. This indeed is expressly recognised by the projectors of the Cambridge History. "It is precisely to the last quarter of the eighteenth century," they say, "that we may trace the growth of the modern scientific spirit of investigation, which may be defined as a recognition of the fact that no object and no idea stands alone by itself as an isolated phenomenon. All objects and all ideas form links in a series, and therefore it follows that nowhere, whether in the realm of nature or in the sphere of human activity, can the present be understood without reference to the past." In the evolution of the race, there are no sudden starts, no absolute beginnings. History is thus like a continuous flow of the Ganges, out of the dark and mysterious heights of hoary antiquity, which emerging flows unceasingly into eternity. The time, however, has not yet arrived for undertaking a history of Ancient Indian History and Culture from the standpoint of the philosophical student of History. Notwithstanding the labours of generations of assiduous scholars in many lands, we are still on the threshold. We are still engaged in discovering, sifting, appraising, evaluating and classifying our material. If at this stage, generalisations were boldly hazarded on the basis of incomplete and imperfect data, our theories might be upset by an unexpected discovery. We cannot consequently blame the contributors to the Cambridge History, many of them famous as profound investigators, merely because they have resisted the temptation to draw an idealistic picture of ancient India and her civilisation. We may feel disappointed that the Cambridge History, inspite of its many excellences, does not reach the ideal of a History of Ancient India, which will portray the picture of each period as evolved out of the sum total of circumstances and activities characterising the preceding age. Such an ideal cannot be realised in a work, which, for the very reason that it is an epoch-making Encyclopædia, composed by an army of experts, fails to furnish a continuous, and uninterrupted flow of historical stream. The synthesis of different chapters and different sections, which makes one period imperceptibly glide into another, can be accomplished by one master mind, like Grote or Mommsen, and not by a

congeries of scholars. The day when India can have a Grote or a Mommsen to write her history, which far transcends that of Greece or Rome not only in the extent of area but also of age, may yet be far distant. Meanwhile, let us hope that some scholar will undertake to write a history which though not exhaustive, is yet a history in the modern scientific sense of the term ; and further let us hope that a teacher connected with an Indian University, shall we say the Calcutta University, may enable us to realise our cherished dream.

I trust I may be allowed to bring this Address to a close with an offer of congratulation to the members of the Society for the happy choice they have made in the election of our new President. It would be inappropriate on my part to extol the eminence of Dr. Annandale in the branch of knowledge which he has made specially his own, but even a layman may be permitted to express the confident opinion that he will yield to none among his predecessors as a fearless and devoted guardian of the truest interests of the Society.

The President announced the election of Officers and Members of Council for the year 1923 to be as follows :—

### Officers and Members of Council.

#### *President.*

N. Annandale, Esq., C.I.E., D.Sc., C.M.Z.S., F.L.S., F.A.S.B., F.R.S.E.

#### *Vice-Presidents.*

The Hon. Justice Sir Asutosh Mukhopadhyaya, Kt., C.S.I., D.L., D.Sc., F.R.S.E., F.R.A.S., F.A.S.B.  
 Mahamahopadhyaya Haraprasad Shastri, C.I.E., M.A., F.A.S.B.  
 J. Coggin Brown, Esq., F.G.S., D.Sc., F.C.S.  
 Lieut.-Col. J. D. W. Megaw, I.M.S

#### *Secretaries and Treasurer.*

General Secretary.....	Johan van Manen, Esq.
Treasurer.....	C. V. Raman, Esq., M.A.
Philological Secretary.....	D. R. Bhandarkar, Esq., M.A., Ph.D., F.A.S.B.
Joint Philological Secretary	S Khuda Bukhsh, Esq., M.A., B.C.L.
Natural History Secretaries. {	Biology. P. J. Brühl, Esq., I.S.C., D.Sc., F.C.S., F.G.S., F.A.S.B.
	Physical Science. P. C. Mahalanobis, Esq., M.A., B.Sc.
Anthropological Secretary	Ramaprasad Chanda, Esq., B.A.
Medical Secretary.....	Major R. Knowles, I.M.S.
Honorary Librarian.....	T. O. D. Dunn, Esq., M.A., D.Litt.
Honorary Numismatist....	C. J. Brown, Esq., M.A.

#### *Other Members of the Council.*

Upendra Nath Brahmachari, Esq., M.D., M.A., Ph.D.  
 Kumar Sarat Kumar Roy, M.A.  
 Sir R. N. Mookerjee, K.C.I.E., K.C.V.O.  
 Pramatha Nath Banerjee, Esq., M.A., B.L.  
 W. A. K. Christie, Esq., B.Sc., Ph.D., F.A.S.B.

The President also announced the election of Fellows to be as follows :—

#### *Fellows.*

S. Khuda Bukhsh, Esq., M.A., B.C.L.  
 Dr. G. N. Mookerjee, B.A., M.D.

The Meeting was then resolved into the Ordinary General Meeting.

[ APPENDIX.]

ABSTRACT STATEMENT  
OF  
RECEIPTS AND DISBURSEMENTS  
OF THE  
ASIATIC SOCIETY OF BENGAL  
FOR  
THE YEAR 1922.

# STATEMENT

## 1922. Asiatic Society of Bengal.

### Dr.

#### To ESTABLISHMENT.

				Rs. As. P.	Rs. As. P.
Salaries .. .. .	..	..	..	8,627 12 7	
Commission .. .. .	..	..	..	444 6 0	
Pension .. .. .	..	..	..	210 0 0	
Share of grant made to the widow of the late Assistant Secretary .. .. .	..	..	..	2,500 0 0	
					11,782 2 7

#### To CONTINGENCIES.

Stationery .. .. .	..	..	..	109 3 6	
Light and Fans .. .. .	..	..	..	131 1 10	
Taxes .. .. .	..	..	..	1,495 0 0	
Postage .. .. .	..	..	..	1,019 6 0	
Freight .. .. .	..	..	..	64 11 9	
Audit fee .. .. .	..	..	..	250 0 0	
Petty Repairs .. .. .	..	..	..	106 4 0	
Insurance .. .. .	..	..	..	343 12 0	
Publications .. .. .	..	..	..	385 0 0	
Miscellaneous .. .. .	..	..	..	509 5 9	
					4,413 12 10

#### To LIBRARY AND COLLECTIONS.

Purchase of Books .. .. .	..	..	..	3,611 0 11	
Book Binding .. .. .	..	..	..	427 1 0	
					4,038 1 11

#### To PUBLICATIONS.

Journal and Memoirs .. .. .	..	..	..	6,983 3 3	
Circulars printing charges, etc. .. .. .	..	..	..	685 2 0	
					7,668 5 3
Bad Debts Written-off .. .. .	..	..	..	288 6 6	
To Balance as per Balance Sheet .. .. .	..	..	..	2,13,868 3 7	
TOTAL Rs. .. .. .	..	..	..	2,42,059 0 8	

No. 1.

General Account.

1922.

Cr.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account ..	..	..	..	2,14,171	0	4

BY CASH RECEIPTS.

Interest on Investments ..	..	12,926	12	0		
Sale of Publications ..	..	215	2	10		
Rent Realized ..	..	650	0	0		
Annual grant from Government for the publication of papers in Journal. (Anthropological grant.) ..	..	2,000	0	0		
Miscellaneous credits ..	..	179	11	3		
					15,971	10 1

BY OUTSTANDING.

Members' Subscriptions ..	..	8,609	0	0		
Subscriptions to Journal, etc. ..	..	672	0	0		
Admission Fees ..	..	676	0	0		
Credit sale of Publications ..	..	1,266	4	1		
Miscellaneous ..	..	693	2	2		
					11,916	6 3

TOTAL Rs.	..	<u>2,42,059</u>	<u>0</u>	<u>8</u>
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## STATEMENT

1922. *Barclay Memorial Fund in Account*

From a sum of Rs. 500 odd given in 1896 by the Surgeon  
encouragement of Medical

Dr.			Rs.	As.	P.	Rs.	As.	P.
To Balance as per Balance Sheet—								
G.P. Notes as per contra	..	..	500	0	0			
Accumulated interest	..	..	107	2	10			
						607	2	10
TOTAL Rs.			..			607	2	10

1922. STATEMENT  
*Servants' Pension*

Founded in 1876 as the Peddington Pension Fund,

Dr.			Rs.	As.	P.	Rs.	As.	P.
To Bank's Commission	..	..				0	4	0
To Balance as per Balance Sheet—								
G.P. Notes as per contra	..	..	1,399	6	0			
Accumulated interest	..	..	311	13	10			
						1,711	3	10
TOTAL Rs.			..			1,711	7	10

No. 2.

*with the Asiatic Society of Bengal. 1922.*

General, I.M.S., for the foundation of a medal for the  
and Biological Science.

Cr.		Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account—							
Rs. 400, 3½% G.P. Notes, 1854-55 at face value	.. ..	400	0	0			
Rs. 100, 3½% G.P. Notes, 1900-1 at face value	.. ..	100	0	0			
Accumulated interest	.. ..	92	3	8			
		<hr/>			592	3	8
.. Interest for the year	.. ..	..			14	15	2
		<hr/>					
TOTAL Rs.	..	..			607	2	10

No. 3.

*Fund.*

*1922.*

with Rs. 500 odd from the Peddington Fund.

Cr.				Rs. As. P.			Rs. As. P.		
By Balance from last Account—									
Rs. 1,400. 3½% G.P. Notes, 1865 at cost				1,399	6	0			
Accumulated interest .. ..				263	1	10			
							1,662	7	10
.. Interest for the year .. ..				..	..	..	49	0	0
TOTAL Rs.				..			1,711	7	10

## STATEMENT

1922.

*Building*

From a sum of Rs. 40,000 given by the Government of India  
Proceeds of the

Dr.

## TO CASH EXPENDITURE.

	Rs.	As.	P.	Rs.	As.	P.
Architects' Fees .. .. .	7,500	0	0			
Bank's Commission .. .. .	1	11	0			
				7,501	11	0
Balance as per Balance Sheet—						
Rs. 40,000, 3½% G.P. Notes, 1865 at cost	38,025	0	0			
Treasury Bills at value .. .. .	63,578	2	0			
Accumulated interest and cash balance	17,499	12	0			
				1,19,102	14	0
TOTAL Rs. .. .. .				1,26,604	9	0

## STATEMENT

1922.

*Catalogue of Scientific Serial*

Dr.

## TO CASH EXPENDITURE.

	Rs.	As.	P.
Cost of Catalogue refunded .. .. .	5	0	0
Balance as per Balance Sheet .. .. .	395	0	0
TOTAL Rs. .. .. .	400	0	0

No. 4.

Fund.

1922.

towards the rebuilding of the Society's Premises, and from the Sale  
Society's Land.

Cr.				Rs. As. P.		
By Balance from last Account ..	..	..		1,22,443	12	0
„ Interest for the year ..	..	..		4,160	13	0

TOTAL Rs.	..			1,26,604	9	0
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No. 5.

Publications Fund, Calcutta.

1922.

Cr.				Rs. As. P.		
By Sale proceeds of Catalogue ..	..	..		400	0	0
<i>Note.</i> —450 Catalogues were printed and were paid for by a sum of Rs. 2,500 given in 1907 by the Trustees of the Indian Museum through the Government of India and a cash payment from the Society of Rs. 134/14/0-.						
TOTAL Rs.	..			400	0	0

STATEMENT

1922. *Bureau of Information in Account*  
 From an annual grant of Rs. 1,200 made by the Govern-

Dr.			Rs.	As.	P.
To Balance as per Balance Sheet	..	..	1,600	0	0
TOTAL Rs.	..	..	1,600	0	0

STATEMENT

1922. *Anthropological Fund in Account*  
 This sum was set aside for the purchase

Dr.			Rs.	As.	P.
To Balance as per Balance Sheet	..	..	968	4	3
TOTAL Rs.	..	..	968	4	3

STATEMENT

1922. *International Catalogue of Scienti-  
 Asiatic Society*

Dr.			Rs.	As.	P.
To CASH EXPENDITURE.					
Salaries ..	..	..	96	0	0
Balance as per Balance Sheet	..	..	5,067	10	0
TOTAL Rs.	..	..	5,163	10	0

No. 6.

*with the Asiatic Society of Bengal. 1922.*  
 ment of Bengal for the salary of the Officer-in-Charge.

---

Cr.			Rs.	As.	P.
By Balance from last Account ..	..	..	1,600	0	0
TOTAL Rs.			1,600	0	0

---

No. 7.

*with the Asiatic Society of Bengal. 1922.*  
 of Anthropological books in 1918.

---

Cr.			Rs.	As.	P.
By Balance from last Account ..	..	..	968	4	3
TOTAL Rs.			968	4	3

---

No. 8.

*fic Literature in Account with the 1922.*  
*of Bengal.*

---

Cr.			Rs.	As.	P.
By Balance from last Account ..	..	..	5,163	10	0
TOTAL Rs.			5,163	10	0

---

## STATEMENT

### 1922. Indian Science Congress in Account

Dr.

#### TO CASH EXPENDITURE.

			Rs.	As.	P.	Rs.	As.	P.
Advance .. .. .	..	..	1,700	0	0			
Contingencies .. .. .	..	..	7	14	6			
Postage .. .. .	..	..	254	11	3			
Printing .. .. .	..	..	2,273	7	6			
Subscriptions Refunded .. .. .	..	..	15	0	0			
Stationery .. .. .	..	..	20	0	0			
Staff Bonuses .. .. .	..	..	88	0	0			
Freight .. .. .	..	..	21	11	0			
						4,380	12	3
Balance as per Balance Sheet .. .. .	..	..				2,342	14	4
						6,723	10	7

TOTAL Rs. ..

## STATEMENT

### 1922. Oriental Publication Fund, No. 1, in

Dr.

#### TO CASH EXPENDITURE.

			Rs.	As.	P.	Rs.	As.	P.
Commission .. .. .	..	..	49	15	9			
Editing Fees .. .. .	..	..	421	0	0			
Salaries .. .. .	..	..	2,715	5	5			
Contingencies .. .. .	..	..	106	15	6			
Postage .. .. .	..	..	268	3	9			
Stationery .. .. .	..	..	18	1	6			
Printing .. .. .	..	..	1,846	6	0			
Light and Fans .. .. .	..	..	45	8	3			
Share of grant made to the widow of the late Asst. Secy. .. .. .	..	..	1,250	0	0			
Purchase of Boxes .. .. .	..	..	7	14	0			
Freight .. .. .	..	..	62	3	0			
						6,791	9	2
Bad Debts Written-off .. .. .	..	..				398	6	9
Balance as per Balance Sheet .. .. .	..	..				55,961	7	1
						63,151	7	0

TOTAL Rs. ..

No. 9.

*with the Asiatic Society of Bengal. 1922.*

Cr.		Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account ..	..	..			1,362	6	7
BY CASH RECEIPTS.							
„ Subscriptions, etc. ..	..	2,361	4	0			
„ Advances ..	..	1,500	0	0			
Donation from Sir R. N. Mookerjee, Kt. ..	..	1,500	0	0			
					5,361	4	0
TOTAL Rs. ..					6,723	10	7

No. 10.

*Acct. with the Asiatic Soc. of Bengal. 1922.*

Cr.		Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account ..	..	..			50,743	14	7
BY CASH RECEIPTS.							
Government of Bengal's annual grant ..	..	9,000	0	0			
Sale of Publications ..	..	454	3	8			
Advances recovered ..	..	90	1	6			
					9,544	5	2
BY OUTSTANDINGS.							
Credit Sale of Publications ..	..	..			2,863	3	3
TOTAL Rs. ..					63,151		7

## STATEMENT

### *1922. Oriental Publication Fund, No. 2, in*

Dr.

TO CASH EXPENDITURE.

			Rs.	As.	P.	Rs.	As.	P.
Printing Charges	..	..	..	..	..	1,120	9	0
Balance as per Balance Sheet	..	..	..	..	..	18,869	0	0
TOTAL Rs.			..	..	..	19,989	9	0

## STATEMENT

### *1922. Sanskrit Manuscript Fund in Acct.*

Dr.

TO CASH EXPENDITURE.

				Rs.	As.	P.	Rs.	As.	P.
Salaries	..	..	..	2,515	3	9			
Contingencies	..	..	..	105	11	3			
Stationery	..	..	..	10	9	6			
Light and Fans	..	..	..	36	7	8			
Insurance	..	..	..	125	0	0			
Printing	..	..	..	90	0	0			
Postage	..	..	..	55	7	3			
							2,938	7	5
Balance as per Balance Sheet	..	..	..	..	..	..	19,961	1	4
TOTAL Rs.			..	..	..	..	22,902	8	9

## STATEMENT

### *1922. Arabic and Persian MSS. Fund in*

Dr.

TO CASH EXPENDITURE.

				Rs.	As.	P.	Rs.	As.	P.
Cataloguing	..	..	..	2,500	0	0			
Salaries	..	..	..	4,760	2	0			
Purchase of Manuscripts	..	..	..	2,140	0	0			
Contingencies	..	..	..	121	5	9			
Stationery	..	..	..	28	11	0			
Postage	..	..	..	4	14	6			
Insurance	..	..	..	31	4	0			
Printing	..	..	..	90	0	0			
							9,676	5	5
Balance as per Balance Sheet	..	..	..	..	..	..	3,522	14	1
TOTAL Rs.			..	..	..	..	13,199	3	4

No. 11.

*Acct. with the Asiatic Soc. of Bengal. 1922.*

Cr.

	P.s.	As.	P.	Rs.	As.	P.
By Balance from last Account..	..	..	..	18,989	9	0
BY CASH RECEIPTS.						
„ Government of Bengal's annual grant up to the 31st March 1922	..	..	..	1,000	0	0
TOTAL Rs.	..	..	..	19,989	9	0

No. 12.

*with the Asiatic Society of Bengal. 1922.*

P.

	P.s.	As.	P.	Rs.	As.	P.
By Balance from last Account..	..	..	..	16,058	10	9
BY CASH RECEIPTS.						
Govt. of Bengal's annual grant for Sanskrit MSS. Preservation	..	..	..	3,200	0	0
Govt. of Bengal's annual grant for Cataloguing (Bureau of Information)	..	..	..	3,600	0	0
Advance ..	..	..	..	0	14	0
				6,800	14	0
BY OUTSTANDINGS.						
Sale of Publications ..	..	..	..	43	0	0
TOTAL Rs.	..	..	..	22,902	8	9

No. 13.

*Acct with the Asiatic Soc. of Bengal. 1922.*

Cr.

	P.s.	As.	P.	Rs.	As.	P.
By Balance from last Account..	..	..	..	8,199	3	4
BY CASH RECEIPTS.						
Govt. of India's annual grant ..	..	..	..	5,000	0	0
TOTAL Rs.	..	..	..	13,199	3	4

# STATEMENT

## Investment

Dr.

	Face Value.	Cost.
	Rs. As. P.	Rs. As. P.
To Balance from last Account ..	2,84,300 0 0	2,73,206 3 10

TOTAL Rs. 2,84,300 0 0 2,73,206 3 10

FUNDS.	31st Dec. 1922 Valua- tion.		Valuation as per Individual Account.		Loss on Re-valuation at 31st Dec. 1922 Rates.	
	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.
<b>GENERAL FUND.</b>						
*Rs. 16,700/- 3½% Government Loan of 1842-43						
@ Rs. 58%, the Rate on 31-12-22 ...	9,686	0 0				
*Rs. 1,53,700/- 3½% Government Loan of 1854-55						
@ Rs. 58%, the Rate on 31-12-22 ...	89,146	0 0				
*Rs. 1,900/- 3½% Government Loan of 1865						
@ Rs. 58%, the Rate on 31-12-22 ...	1,102	0 0				
Rs. 1,000/- 3½% Government Loan of 1865						
@ Rs. 58%, the Rate on 31-12-22 ...	580	0 0	2,23,181	13 10	88,447	13 10
Rs. 8,000/- 3½% Government Loan of 1879						
@ Rs. 58%, the Rate on 31-12-22 ...	4,640	0 0				
Rs. 51,000/- 3½% Government Loan of 1900-01						
@ Rs. 58%, the Rate on 31-12-22 ...	29,580	0 0				
Rs. 10,100/- 4% Terminable Loan of 1915-16						
@ Rs. 98%, the Rate on 31-12-22 ...	9,898	0 0	10,100	0 0	202	0 0
<b>BUILDING FUND.</b>						
Rs. 40,000/- 3½% Government Loan of 1865						
@ Rs. 58%, the Rate on 31-12-22 ...	23,200	0 0	38,025	0 0	14,825	0 0
<b>PENSION FUND.</b>						
Rs. 1,400/- 3½% Government Loan of 1865						
@ Rs. 58%, the Rate on 31-12-22 ...	812	0 0	1,399	6 0	587	6 0
<b>BARCLAY MEMORIAL FUND.</b>						
Rs. 400/- 3½% Government Loan of 1854-55						
@ Rs. 58%, the Rate on 31-12-22 ...	232	0 0				
Rs. 100/- 3½% Government Loan of 1900-01						
@ Rs. 58%, the Rate on 31-12-22 ...	58	0 0	506	0 0	210	0 0
<b>TOTAL Rs.</b>	<b>1,68,934</b>	<b>0 0</b>	<b>2,73,206</b>	<b>3 10</b>	<b>1,04,272</b>	<b>3 10</b>

\* Investments of Permanent Reserve.

No. 14.

Account.

1922.

		Cr.					
		Face Value.			Cost.		
		Rs. As. P.			Rs. As. P.		
By Balance as per Balance Sheet	..	2,84,300	0	0	1,68,934	0	0
„ Loss on Re-valuation at 31st December							
1922 Rates	.. ..				1,04,272	3	10
TOTAL Rs.		2,84,300	0	0	2,73,206	3	10

# STATEMENT

## 1922.

## War Bond

Dr.		Face Value.			Cost.		
		Rs. As. P.			Rs. As. P.		
To Balance from last Account ..	..	80,000	0	0	81,693	11	10
TOTAL Rs.		80,000	0	0	81,693	11	10

FUNDS.	31st Dec. 1922 Valuation.			Valuation as per War Bond Account.			Loss on Re-valuation at 31st Dec. 1922 Rates.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
GENERAL FUND.									
Rs. 75,000/- 5½% Bonds of 1928 @ Rs. 100/-, Rate on 31st December 1922 ..	75,375	0	0	81,693	11	10	1,306	3	10
Rs. 5,000/- 6% Bond of 1926 @ Rs. 100/-, Rate on 31st December 1922 ..	5,012	8	0						
TOTAL Rs. ..	80,387	8	0	81,693	11	10	1,306	3	10

# STATEMENT

## 1922.

## Treasury Bills

Dr.		Face Value.			Cost.		
		Rs. As. P.			Rs. As. P.		
To Balance from last Account—							
Six months' Bills ..	..	65,000	0	0	63,862	8	0
To Purchase during the year—							
Six months' Bills ..	..	1,30,000	0	0	1,26,953	2	0
TOTAL Rs.		1,95,000	0	0	1,90,815	10	0

No. 15.

Account.

1922.

	Cr.	Face Value.			Cost.		
		Rs. As. P.			Rs. As. P.		
By Balance as per Balance Sheet ..		80,000	0	0	80,387	8	0
.. Loss on Re-valuation at 31st December 1922 Rates .. .. .					1,306	3	10
TOTAL Rs.		80,000	0	0	81,693	11	10

No. 16.

Account.

1922.

	Cr.	Face Value.			Cost.		
		Rs. As. P.			Rs. As. P.		
By Realizations from the Imperial Bank of India .. .. .		1,30,000	0	0	1,27,237	8	0
By Balance of Bills in hand carried forward as per Balance Sheet .. .. .		65,000	0	0	63,578	2	0
TOTAL Rs.		1,95,000	0	0	1,90,815	10	0

1922.

## STATEMENT

*Personal*

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Balance from last Account ..	..	..	..	3,244	2	4
„ Advances for postage, etc. ..	..	..	..	624	4	3
Asiatic Society's Subscriptions, etc. ..	11,916	6	3			
Sales of Oriental Publications as per						
Fund No. 1 ..	2,863	3	3			
Sales as per Sanskrit Manuscript Fund	43	0	0			
				14,822	9	6

TOTAL Rs.	..	18,691	0	1
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1922.

## STATEMENT

*Fixed Deposit*

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Balance from last Account ..	..	..	..	8,619	11	7
TOTAL Rs.	..	..	..	8,619	11	7

No. 17.

Account.

1922.

Cr.

	Rs.	As.	P.	Rs.	As.	P.
By Realization during the year ..	..			13,880	13	7
Bad Debts Written-off, Asiatic Society	288	6	6			
do. , O. P. Fund No. 1	398	6	9			
				686	13	3

By Outstandings.	Due to the Society.			Due by the Society.		
	Rs.	As.	P.	Rs.	As.	P.
Members ...	4,756	8	0	154	10	6
Subscribers ...	...	...	...	22	11	0
Bill Collector's Deposit ...	...	...	...	100	0	0
Miscellaneous ...	419	4	6	275	1	9
	5,175	12	6	552	7	3

TOTAL Rs.

..	4,623	5	3
..	18,691	0	1

No. 18.

Account.

1922.

Cr.

	Rs.	As.	P.	Rs.	As.	P.
By Balance .. ..	..			8,619	11	7
TOTAL Rs.	..			8,619	11	7

## STATEMENT

1922.

Cash

## Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Balance from last Account ..	..	..	..	11,328	12	9
„ Asiatic Society ..	..	15,971	10 1			
„ Barclay Memorial Fund ..	..	14	15 2			
„ Servants' Pension Fund ..	..	49	0 0			
„ Building Fund ..	..	4,160	13 0			
„ Catalogue of Scientific Sl. Pub., Calcutta ..	..	395	0 0			
„ Indian Science Congress ..	..	5,361	4 0			
„ Oriental Publication Fund No. 1 ..	..	9,544	5 2			
„ Do. do. No. 2 ..	..	1,000	0 0			
„ Sanskrit MSS. Fund ..	..	6,800	14 0			
„ Arabic and Persian MSS. Fund ..	..	5,000	0 0			
„ Treasury Bills Account ..	..	1,27,237	8 0			
„ Personal Account ..	..	13,380	13 7			
				1,88,916	3	0
TOTAL Rs. ..				2,00,244	15	9

## STATEMENT

1922.

Balance

## LIABILITIES.

	Rs.	As.	P.	Rs.	As.	P.
Asiatic Society ..	..	2,13,868	3 7			
Barclay Memorial Fund ..	..	607	2 10			
Servants' Pension Fund ..	..	1,711	3 10			
Building Fund ..	..	1,19,102	14 0			
Catalogue of Scientific Sl. Pub., Calcutta ..	..	395	0 0			
Bureau of Information ..	..	1,600	0 0			
Anthropological Fund ..	..	968	4 3			
International Catalogue of Scientific Literature ..	..	5,067	10 0			
Indian Science Congress ..	..	2,342	14 4			
Oriental Publication Fund No. 1 ..	..	55,961	7 1			
Do. do. No. 2 ..	..	18,869	0 0			
Sanskrit MSS. Fund ..	..	19,964	1 4			
Arabic and Persian MSS. Fund ..	..	3,522	14 1			
				4,43,980	11	4
Less—Depreciation on Investments and War Bonds at close of the year as per Investments and War Bond Accounts ..	..	1,05,578	7 8			
				3,38,402	3	8
TOTAL Rs. ..				3,38,402	3	8

We have examined the above Balance Sheet and the appended detailed Accounts with the Books and Vouchers presented to us and certify that it is in accordance therewith, correctly setting forth the position of the

No. 19.

Account.

1922.

Cr.					
			Rs.	As.	P.
By Asiatic Society .. .. .	..	..	27,902	6	7
.. Servants' Pension Fund .. .. .	..	..	0	4	0
.. Building Fund .. .. .	..	..	7,501	11	0
.. International Catalogue of Scientific Literature .. .. .	..	..	96	0	0
.. Indian Science Congress Account .. .. .	..	..	4,380	12	3
.. Oriental Publication Fund No. 1 .. .. .	..	..	6,791	9	2
.. Do. do. No. 2 .. .. .	..	..	1,120	9	0
.. Sanskrit MSS. Fund .. .. .	..	..	2,938	7	5
.. Arabic and Persian MSS. Fund .. .. .	..	..	9,676	5	3
.. Treasury Bills Account .. .. .	..	..	1,26,953	2	0
.. Personal Account .. .. .	..	..	624	4	3
			<hr/>		
.. Balance as per Balance Sheet .. .. .	..	..	1,87,958	6	11
			<hr/>		
TOTAL Rs. .. .. .			2,00,244	15	9
			<hr/>		

No. 20.

Sheet.

1922.

ASSETS.					
			Rs.	As.	P.
Investments .. .. .	..	..	1,68,934	0	0
War Bonds .. .. .	..	..	80,387	8	0
Treasury Bills .. .. .	..	..	63,578	2	0
Personal Account .. .. .	..	..	4,623	5	3
Fixed Deposit .. .. .	..	..	8,619	11	7
Cash Account .. .. .	..	..	12,259	8	10
			<hr/>		
			3,38,402	3	8
			<hr/>		
TOTAL Rs. .. .. .			3,38,402	3	8
			<hr/>		

W. R. C. BRIERLEY.

Hon. Treasurer.

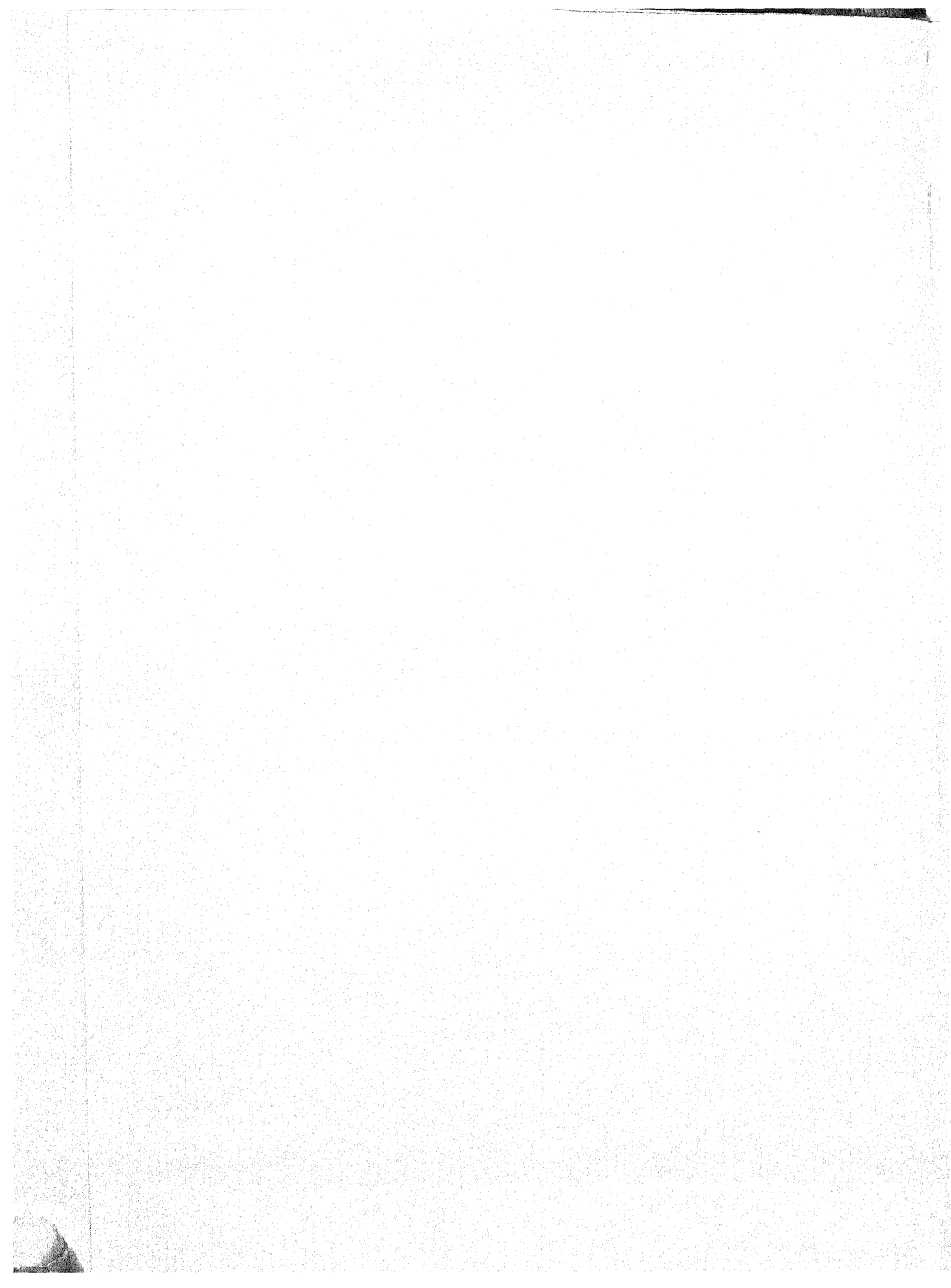
Calcutta, 1st February, 1923.

Copy of Certified Statement of Securities in Custody of Bank of Bengal on account of Asiatic Society of Bengal, December 31, 1922:—

3½	per cent Loan of 1842-43	..	..	..	16,700
3½	" " " " 1854-55	..	..	..	1,54,100
3½	" " " " 1865 ..	..	..	..	44,300
3½	" " " " 1879 ..	..	..	..	8,000
3½	" " " " 1900-1	..	..	..	51,100
*3	" " " " 1896-97	..	..	..	500
4	" " Terminable Loan of 1915-16	..	..	..	10,100
6	" " Bonds of 1926 ..	..	..	..	5,000
5½	" " War Bonds of 1928	..	..	..	75,000
	Indian Treasury Bill ..	..	..	..	65,000
TOTAL Rs. ..					<u>4,29,800</u>

[\* Cashier's security deposit.]

**List of**  
**Officers, Council Members, Members,**  
**Fellows and Medallists**  
**of the**  
**Asiatic Society of Bengal**  
**On the 31st December, 1922.**



OFFICERS AND MEMBERS OF COUNCIL OF THE  
ASIATIC SOCIETY OF BENGAL FOR  
THE YEAR 1922.

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*President.*

The Hon'ble Justice Sir Āsutosh Mukhopādhyāya, Kt., C.S.I.,  
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Upendra Nath Brahmachari, Esq., M.D., M.A., Ph.D., F.A.S.B.

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C.M.Z.S., F.L.S., F.A.S.B.  
Physical Science :—E. P. Harrison, Esq.,  
Ph.D., F.R.S.E., F.Inst.P.  
Anthropological Secretary :—Ramaprasad Chanda, Esq., B.A.,  
F.A.S.B.  
Medical Secretary :—Major R. Knowles, I.M.S.  
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F.A.S.B., Bar.-at-Law.  
T. O. D. Dunn, Esq., M.A., D.Litt.  
S. Khuda Bukhsh, Esq., M.A., B.C.L.

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*Honorary Numismatist.*

W. E. M. Campbell, Esq.

OFFICERS AND MEMBERS OF COUNCIL OF THE  
ASIATIC SOCIETY OF BENGAL FOR  
THE YEAR 1923.

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*President.*

N. Annandale, Esq., C.I.E., B.A., D.Sc., C.M.Z.S., F.L.S.,  
F.A.S.B., F.R.S.E.

*Vice-Presidents.*

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D.L., D.Sc., F.R.S.E., F.R.A.S., F.A.S.B.  
Mahāmahopādhyāya Haraprasād Shāstrī, C.I.E., M.A., F.A.S.B.  
J. Coggin Brown, Esq., F.G.S., D.Sc., F.C.S., F.A.S.B.  
Lieut.-Col. J. D. W. Megaw, I.M.S.

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Treasurer :—C. V. Raman, Esq., M.A.  
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F.A.S.B.  
Joint Philological Secretary :—S. Khuda Bukhsh, Esq., M.A.,  
B.C.L.  
Natural History Secretaries { Biology :—P. J. Brühl, Esq., I.S.O., D.Sc.,  
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M.A., B.Sc.  
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Medical Secretary :—Major R. Knowles, I.M.S.  
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Kumar Sarat Kumar Roy, M.A.  
Sir R. N. Mookerjee, K.C.I.E., K.C.V.O.  
Pramatha Nath Banerjee, Esq., M.A., B.L.  
W. A. K. Christie, Esq., B.Sc., Ph.D., F.A.S.B.

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*Honorary Numismatist.*

C. J. Brown, Esq., M.A.

## LIST OF ORDINARY MEMBERS.

R.=Resident. N.R.=Non-Resident. A.=Absent. L.M.=Life Member.  
F.M.=Foreign Member.

An Asterisk is prefixed to the names of the Fellows of the Society.

*N.B.*—Members who have changed their residence since the list was drawn up are requested to give intimation of such a change to the General Secretary, in order that the necessary alteration may be made in the subsequent edition. Errors or omissions in the following list should also be communicated to the General Secretary.

Members who are about to leave India and do not intend to return are particularly requested to notify to the General Secretary whether it is their desire to continue Members of the Society; otherwise, in accordance with Rule 40 of the rules, their names will be removed from the list at the expiration of three years from the time of their leaving India.

Date of Election.		
1922 April 5.	R	Abdul Ali, Abul Faiz Muhammad, M.A., M.R.A.S., F.R.S.L., etc. 3, <i>Turner Street, Calcutta.</i>
1919 Feb. 5.	N.R.	Abdul Kader Surfraz. <i>Elphinstone College, Bombay.</i>
1909 Mar. 3.	R.	Abdul Latif, Syed, Khan Bahadur, B.A., B.L., Asst. Secretary to the Government of Bengal, Revenue Dept., Writers' Buildings, Calcutta. 32/1, <i>Upper Circular Road, Calcutta.</i>
1894 Sept. 27.	L.M.	Abdul Wali, Khan Sahib. 3, <i>Alimuddin Street, Calcutta.</i>
1921 Mar. 2.	R.	Acton, Major Hugh William, M.R.C.S., L.R.C.P. (Lond.), I.M.S. <i>School of Tropical Medicine and Hygiene, Central Avenue, Calcutta.</i>
1921 Mar. 2.	R.	Agharkar, Shankar Purushottam, M.A., Ph.D., F.L.S., Professor of Botany, Calcutta University. 35, <i>Ballygunge Circular Road, Calcutta.</i>
1915 Feb. 3.	N.R.	Ahmad Ali Khan, Hafiz, Controller of Household and Officer in Charge of State Library. <i>Rampur State, U.P.</i>
1920 Jan. 7.	N.R.	Aiyer, S. Paramesvara, M.A., B.L., M.R.S.L., M.F.L.S., M.E.I.A., Kavitalaka, Secretary

Date of Election.		to the Government of Travancore. <i>Trivandrum, South India.</i>
1903 Oct. 28.	R.	Allan, Alexander Smith, M.B. 17 & 18, <i>Esplanade Mansions, Calcutta.</i>
1919 July 2.	R.	Amin-ul-Islam, Khan Bahadur, Nawab- zada, B.L. <i>Inspector-General of Regis- tration, Bengal.</i>
1912 July 3.	N.R.	Andrews, Egbert Arthur, B.A. <i>Tooklai Experimental Station, Cinnamara P.O., Jorhat, Assam.</i>
1904 Sept. 28.	L.M.	*Annandale, Nelson, C.I.E., D.Sc., C.M.Z.S., F.L.S., F.A.S.B., F.R.S.E., Director, Zoolog- ical Survey of India <i>Calcutta.</i>
1911 May 3.	R.	Atkinson, Albert Charles. <i>La Martinière, 11, Loudon Street, Calcutta.</i>
1904 July 6.	N.R.	Aulad Hasan, Khan Bahadur, Sayid. <i>Rajar Deori, Dacca.</i>
1917 April 4.	N.R.	Awati, P. R., M.A., Medical Entomologist, Central Research Institute. <i>Kasauli.</i>
1914 Mar. 4.	L.M.	Bacot, J. 31, <i>Quai d'Orsay, Paris.</i>
1870 Feb. 2.	L.M.	Baden-Powell, Baden Henry, M.A., C.I.E. <i>Ferlys Lodge, 29, Banbury Road, Oxford, England.</i>
1919 April 2.	R.	Bal, Surendra Nath, Ph.C., M.Sc., F.L.S., Curator, Industrial Section, Indian Museum. 1, <i>Sudder Street, Calcutta.</i>
1918 April 3	N.R.	Ballabhdas, Dewan Bahadur, Banker and Zemindar. <i>Jubbulpur.</i>
1920 Mar. 3.	R.	Ballardie, J. H. de Caynoth, A.R.I.B.A. 7, <i>Old Court House Street, Calcutta.</i>
1918 Feb. 6.	N.R.	Banerjee, Narendra Nath, M.I.P.O.E.E. (Lond.), A.M.I.E. (Ind.), Divisional Engineer, Telegraphs. <i>Mandalay (Burma).</i>
1922 April 5.	N.R.	Banerjee, Sasadhar, B.A., Head Master, H. E. School, Gopalganga. <i>Gopalganj P. O., Bihar.</i> [Calcutta.
1905 Mar. 1.	R.	Banerji, Muralidhar. <i>Sanskrit College,</i>
1919 July 2.	R.	Banerji, Pramathanath, M.A., D.Sc. <i>Cal- cutta University, Calcutta.</i>
1919 July 2.	R.	Banerji, Pramathanath M.A., B.L., Vakil, High Court. <i>Calcutta.</i>
1907 Jan. 2.	R.	Banerji, Rakhal Das, M.A. 65, <i>Simla Street, Calcutta.</i>
1918 Dec. 4.	R.	Banerji, Sudhansu Kumar, Ghose Prof. of Applied Mathematics, <i>Calcutta University. Calcutta.</i>

Date of Election.		
1921 May 4.	R.	Barman, Madan Mohan, Merchant and Landlord. 145, <i>Harrison Road, Calcutta.</i>
1898 Mar. 2.	N.R.	Barnes, Herbert Charles, M.A. (Oxon.), C.I.E. <i>Gauhati, Assam.</i>
1918 July 3.	R.	Basu, Charu Chandra, B.A., M.B. 52/2, <i>Mirzapur Street, Calcutta.</i>
1922 Aug. 2.	N.R.	Batta, Bhagwan Das, Consulting and Analytical Chemist. <i>Munshian Street, Nabha State.</i>
1909 July 7.	N.R.	Bazaz, Rangnath Khemraj, Proprietor, Shri Venkateshwar Press. <i>7th Khetwadi, Bombay No. 4.</i>
1895 July 3.	L.M.	Beatson-Bell, The Hon. Sir Nicholas Dodd, B.A., C.I.E., I.C.S., Chief Commissioner of Assam. <i>Shillong.</i>
1907 Feb. 6.	N.R.	Bell, Charles Alfred, C.M.G., I.C.S. <i>The Elms, Darjeeling.</i>
1915 April 7.	N.R.	Belvalkar, Sripad Krishna, M.A., Ph.D., Prof. of Sanskrit, Deccan College. <i>Poona.</i>
1909 April 7.	R.	Bentley, Charles A., M.B., D.P.H. <i>Writers' Buildings, Calcutta.</i>
1876 Nov. 15.	F.M.	*Beveridge, Henry, F.A.S.B., I.C.S. (Retired). 53, <i>Camden House Road, W. 8, London.</i>
1917 Aug. 1.	R.	*Bhandarkar, Devadatta Ramkrishna, M.A. 35 <i>Circular Road, Ballygunge.</i>
1909 July 7.	R.	Bhattacharji, Shib Nath, M.B. 80, <i>Shambazar Street, Calcutta.</i>
1908 Nov. 4.	R.	Bhattacharya, Bisvesvar, B.A., M.R.A.S., B.C.S. 16, <i>Townshend Road, Bhawanipore, Calcutta.</i>
1922 Feb. 1.	N.R.	Bhattacharya, Vidushekhara, Prof., Visvabharati. <i>Santiniketan, Birbhum.</i>
1922 June 7.	R.	Bhattacharyya, Dr. Sivapada, M.D. <i>School of Tropical Medicine, Calcutta.</i>
1922 Dec. 6.	N.R.	Blackett, Sir Basil Phillot, K.C.B., Finance Member, Government of India. <i>Delhi and Simla.</i>
1893 Feb. 1.	L.M.	Bodding, Revd. P. O. <i>Dumka, Sonthal Parganas</i>
1912 July 3.	R.	Bomford, Capt. Trevor Lawrence. I.M.S., M.B., B.S., M.R.C.S., L.R.C.P. <i>Eden Hospital, Calcutta.</i>
1919 June 6.	R.	Bose, Ajit Mohan, M.B., Ch.B (Edin.), L.M. (Dub.). 92/3, <i>Upper Circular Road, Calcutta.</i>

Date of Election.		
1898 Feb. 2.	R.	Bose, Amrita Lal, Dramatist. 9-2, <i>Ram Chandra Maitra Lane, Calcutta.</i>
1895 Mar. 6.	R.	*Bose, Sir Jagadis Chandra, Kt., C.S.I., M.A. D.Sc., C.I.E., F.A.S.B. <i>Presidency College, Calcutta.</i>
1922 Apl. 5.	N.R.	Bose, Jogesh Chandra, Landholder <i>Contai, Midnapore.</i>
1917 Oct. 3.	N.R.	Bose, Satyendra Nath, M.Sc. <i>University College of Science, Calcutta.</i>
1920 Mar. 3.	N.R.	Bosworth-Smith, Percy, F.G.S., M.I.M.M., M.A.I.M.E. <i>Kolar Gold Field, Mysore State, Oorgaum P.O., South India.</i>
1910 July 6.	N.R.	Botham, Arthur William, I.C.S. <i>Shillong.</i>
1908 Jan. 1.	R.	Brahmachari, Upendra Nath, M.A., Ph.D., M.D., F.A.S.B. 82/3, <i>Cornwallis Street, Calcutta.</i>
1920 Sep. 1.	N.R.	Brandon, Ali Reza, F.J., Captain, Recruiting Officer, Collieries. <i>Balharshah, C.P.</i> [Calcutta.]
1921 Nov. 2.	R.	Brierly, W. R. C. 41, <i>Bankshall Street,</i>
1920 Feb. 4.	N.R.	Brij Narayan, M.A., F.R.Hist.S., M.R.A.S. 8, <i>Bank Road, Allahabad.</i>
1907 July 3.	R.	*Brown, John Coggin, O.B.E., D.Sc., F.G.S., M.I.M.E., M.Inst.M.M., M.I.E. (Ind.), F.A.S.B. Geological Survey of India. 27, <i>Chowringhee, Calcutta.</i>
1909 Oct. 6.	R.	Brown, Percy, A.R.C.A. <i>Government School of Art, Calcutta.</i>
1909 Oct. 6.	R.	*Brühl, Paul Johannes, I.S.O., D.Sc., F.C.S., F.G.S., F.A.S.B. 35, <i>Ballygunge Circular Road, Calcutta.</i>
1901 June 5.	F.M.	*Burkill, Isaac Henry, M.A., F.A.S.B. <i>Botanic Gardens, Singapur.</i>
1896 Jan. 8.	N.R.	*Burn, Richard, C.I.E., I.C.S., F.A.S.B. <i>Board of Revenue, Allahabad, U.P.</i>
1900 May 2.	N.R.	Butcher, Flora, L.M.S., Tanakpur Medical Mission. <i>Tanakpur, Rohilkhand Kumaon Ry., U.P.</i>
1913 Apl. 2.	R.	Calder, Charles Cumming. <i>Royal Botanic Gardens, Sibpur, Howrah.</i>
1918 June 5.	A.	Campbell, Major W. L., I.A. <i>Europe (c/o India Office).</i>
1901 Mar. 6.	N.R.	Campbell, William Edgar Marmaduke, I.C.S., Commissioner Benares Division. <i>Benares.</i>
1918 July 3.	R.	Campos, Joachim Joseph, M.B. 16/2, <i>Royd Street, Calcutta.</i>

Date of Election.		
1915 Jan. 6.	A.	Carter, Humphry G., M.B., Ch.B. <i>Botanic Gardens, Cambridge, England.</i>
1920 Sept. 1.	R.	Chakladar, Haran Chandra. 28/4, <i>Sahana-gar Lane, Kalighat, Calcutta.</i>
1909 Mar. 3.	R.	Chakravarti, Nilmani, M.A. <i>Presidency College, Calcutta.</i> [Gauhati.]
1905 July 5.	N.R.	Chakravarti, Vanamali. <i>Cotton College,</i>
1920 Sept. 1.	R.	*Chanda, Ramaprasad, B.A., F.A.S.B. 37A, <i>Police Hospital Road, Calcutta.</i>
1906 Jan. 3.	A.	Chapman, John Alexander. <i>Europe (c/o Imperial Library, Calcutta).</i>
1915 Oct. 27.	N.R.	Chatterjee, Atul Chandra, I.C.S. <i>Lucknow.</i>
1911 June 7.	R.	Chatterjee, Karuna Kumar, F.R.C.S. 74, <i>Dharamtala Street, Calcutta.</i>
1916 Jan. 5.	R.	Chatterjee, Khagendra Nath, B.A., B.L., <i>Attorney-at-Law. 12, Madan Mohan Chatterjee Lane, Calcutta.</i>
1920 Sep. 1.	R.	Chatterjee, Nirmal Chandra. 52, <i>Haris Mukerjee Road, Bhowanipore, Calcutta.</i>
1907 Sept. 25.	R.	Chatterjee, Promode Prakas. 8, <i>Dixon Lane, Calcutta.</i>
1922 April 5.	R.	Chatterjee, Rakhahari, B.A., Student, Calcutta University. 7, <i>Lakshman Das Lane, Howrah.</i>
1893 Sept. 28.	R.	Chaudhuri, B. L., B.A., D.Sc. (Edin.), F.R.S.E., F.L.S. (Lond.). 120, <i>Lower Circular Road, Calcutta.</i>
1914 April 1.	R.	Chaudhuri, Gopal Das. 32, <i>Beadon Row, Calcutta.</i>
1922 Feb. 1.	R.	Chopra, R. N., Major, I.M.S., Prof. of Pharmacology, School of Tropical Medicine. <i>Calcutta.</i>
1907 July 3.	R.	*Christie, William Alexander Kynoch, B.Sc., Ph.D., M.Inst.M.M., F.A.S.B. <i>Geological Survey of India, Calcutta.</i>
1909 Nov. 3.	N.R.	*Christophers, Major Samuel Richmond, M.B., F.A.S.B., I.M.S. <i>Research Laboratory, Kasauli.</i>
1906 Nov. 7.	N.R.	Clarke, Geoffrey Roth, I.C.S., Director General, Posts and Telegraphs. <i>Simla.</i>
1915 Sept. 1.	R.	Cleghorn, Maude Lina West, F.L.S., F.E.S. 12, <i>Alipur Road, Calcutta.</i>
1920 Dec. 1.	R.	Connor, Lieut.-Col. F. P. 2, <i>Upper Wood Street, Calcutta.</i>
1907 July 3.	A.	Cotter, Gerald de Purcell, B.A., F.G.S. <i>Europe (c/o Geological Survey of India).</i>
1887 Aug. 25.	R.	Criper, William Risdon, F.C.S., F.I.C.

Date of Election.		
		A.R.S.M. Konnagar, E.I.R., Hughly, (Bengal).
1918 April 3	N.R.	Das, Jagannath, Ratnakar, B.A., Kavi-Sudhakar. <i>The Rajsadan, Ajodhya.</i>
1915 Sept. 1.	R.	Das-Gupta, Hem Chandra, M.A., F.G.S., Prof., Presidency College. <i>Calcutta.</i>
1922 Sept. 6.	N.R.	Das-Gupta, Dr. Surendra Nath, Prof. of Sanskrit and Philosophy, Chittagong College. <i>Chittagong.</i>
1917 April 4.	R.	Datta, Rasik Lal, D.Sc., F.C.S., F.R.S.E., Industrial Chemist, Dept. of Industries, Bengal. 78, <i>Manicktola St., Calcutta.</i>
1922 Dec. 6.	R.	Datta, Dines Chandra, M.A., Prof., St. Joseph College. <i>Calcutta.</i>
1910 Jan. 5.	R.	David, David A. 55, <i>Free School Street, Calcutta.</i>
1895 Sept. 19.	R.	De, Kiran Chandra, B.A., C.I.E., I.C.S., Commissioner, Presidency Division, Bengal. <i>Theatre Road, Calcutta.</i>
1917 June 6.	R.	Deb, Kumar Harit Krishna, M.A., Zemindar, Sobhabazar Rajbati. <i>Raja Navakrishna Street, Calcutta.</i>
1921 Sept. 7.	R	Deb, Profulla Krishna, Zemindar and Landlord. 106/1, <i>Grey Street, Calcutta.</i>
1904 Sept. 28.	N.R.	De Courcy, William Blennerhasset. <i>Leddesdale Estate, Naduwatum P.O., Nilgiris.</i>
1906 Dec. 5.	N.R.	Dentith, Arthur William, I.C.S. <i>Shillong.</i>
1910 May 4.	L.M.	Dhavle, Sankara Balaji, I.C.S., District and Sessions Judge. <i>Cuttack.</i>
1922 April 5.	N.R.	Dhruva, A. B., Principal, C.H. College, Benares University. <i>Benares.</i>
1920 Aug. 4.	R.	Dikshit, Kashinath Narayan, M.A., Superintendent, Archæological Survey, Eastern Circle. <i>Calcutta.</i>
1907 Oct. 30.	N.R.	Dixit, Sri Ram, B.A. <i>Dewan of Banswara, Rajputana.</i>
1898 Jan. 5.	R.	Dods, William Kane, Agent, Hongkong and Shanghai Banking Corporation. <i>Calcutta.</i> [cutta.
1902 July 2.	R.	Doxey, Frederick. 63, <i>Park Street, Cal-</i>
1909 Aug. 4.	N.R.	Drake-Brockman, Digby Livingstone, B.A., I.C.S. <i>Jodhpur, Rajputana.</i>
1919 Nov. 5.	N.R.	Dube, Babool Mayeshanker. <i>R. N. High School, Fathpur (Jaipur).</i>
1917 June 6.	R.	Dunn, Theodore Oliver Douglas, M.A., D.Litt. <i>United Service Club, Calcutta.</i>

Date of Election.		
1914 Sept. 2.	R.	Dutt, B. C. 172, <i>Manicktola Street, Calcutta.</i>
1920 April 7.	R.	Dutt, Kumar Krishna. 10, <i>Hastings Street, Calcutta.</i>
1922 April 5.	N.R.	Dutta, Bhagad, Prof. and Supdt., Research Dept., Dayanand Anglo-Vedic College. <i>Lahore.</i>
		[ <i>Calcutta.</i>
1910 April 6.	R.	Elmes, Dr. Cecil H. <i>Harrington Mansion,</i>
1911 Nov. 1.	A.	Esch, V. J., Architect. <i>Victoria Memorial Building, Cathedral Avenue, Maidan, Calcutta.</i>
1904 Aug. 3.	R.	*Fermor, Lewis Leigh, A.R.S.M., D.Sc., F.G.S., F.A.S.B. <i>Geological Survey of India, Calcutta.</i>
1906 Oct. 31.	N.R.	Finlow, Robert Steel, B.Sc., F.I.C., Director of Agriculture. Bengal. <i>Ramna P.O., Dacca.</i>
1913 Nov. 5.	R.	Fox, Cyril S., B.Sc., M.I.M.E., F.G.S. <i>Geological Survey of India, Calcutta.</i>
1919 April 2.	N.R.	Friel, Ralph, I.C.S. <i>Silchar, Assam.</i>
1922 April 5.	R.	Fülep, E. G., Merchant, Proprietor, E. G. Fülep & Co., Calcutta, Bombay and Hamburg. 5, <i>Mission Row, Calcutta.</i>
1903 Mar. 4.	A.	*Gage, Lieut.-Col. Andrew Thomas, M.A., M.B., B.Sc., F.L.S., F.A.S.B., I.M.S. <i>Europe (c/o Royal Botanic Gardens, Howrah).</i>
1919 Feb. 5.	F.M.	Galoostian, Valarshak Mackertich. <i>P.O. Box 607, Sanger, California, U.S.A.</i>
1919 Nov. 5.	N.R.	Gambhir, J. S. <i>Shamaldas College, Bhavnagar, Kathiawar.</i>
1909 Oct. 7.	R.	Gangoly, Ordhendra Coomar. B.A. 12/1, <i>Gangoly Lane, Calcutta.</i>
1912 Mar. 6.	R.	Ganguli, Manmohan, B.E. 50, <i>Raja Rajballav Street, Calcutta.</i>
1920 Mar. 3.	N.R.	Ganguli, Captain P., I.M.S. <i>Rawalpindi.</i>
1922 July 5.	N.R.	Gaur, Udai Narain, Zamindar, <i>Pidwhal Ghosi P.O., Azamgarh, U.P.</i>
1921 June 1.	R.	Ghatak, Prof. Joyotischandra. 5, <i>Boloram Bose Ghat Lane, Bhowanipore, Calcutta.</i>
1905 July 5.	R.	Ghosh, Amulya Charan, Vidyabhusana. 82, <i>Manicktolla Street, Calcutta.</i>
1912 Aug. 7.	R.	Ghosh, Atal Behari, M.A., B.L. 59, <i>Sukea Street, Calcutta.</i>

Date of Election.		
1918 Feb. 6.	R.	Ghosh, Ekendra Nath, M.D., M.Sc., F.Z.S., F.R.M.S., Prof. of Biology, Medical College <i>Calcutta</i> .
1907 Mar. 6.	R.	Ghosh, Prafulla Chundra, M.A. <i>Presidency College, Calcutta</i> .
1920 May 5.	R.	Ghosh, Sukhendra Nath, B.A. (Cal.), B.Sc. (Glasg.), A.M.I.C.E., M.R.San.I., M.I.E. (Ind.), Executive Engineer, P.W.D., Bengal. 7, <i>Haysham Road, Calcutta</i> .
1912 Sept. 4.	R.	Ghosh, Tarapada. 14, <i>Paddapuker Street, Kidderpur, Calcutta</i> .
1919 Feb. 5.	N.R.	Ghulam Mohiud-din Sufi. <i>Normal School, Amraoti</i> .
1922 April 5.	N.R.	Goswami, Sarat Chandra, Supdt, <i>Normal School, Jorhat</i> .
1920 July 7.	R.	Gourlay, Lieut. Col., Charles Aikman, D.S.O., I.M.S., M.A., M.D. 16, <i>Alipore Park, South, Calcutta</i> .
1909 Jan. 6.	R.	Gourlay, William Robert, C.I.E., I.C.S. <i>Government House, Calcutta</i> .
1910 Sept. 7.		*Gravelly, Frederic Henry, D.Sc., F.A.S.B. <i>Government Central Museum, Madras</i> .
1905 May 3.	N.F.	Graves, Henry George, A.R.S.M. 52, <i>Carington Road, Bedford, England</i> .
1910 Mar. 2.	N.R.	*Greig, Major Edward David Wilson, M.B., F.A.S.B., I.M.S. <i>Simla</i> .
1900 Dec. 5.	L.M.	Grieve, James Wyndham Alleyne. <i>C/o Messrs. Coutts &amp; Co, 440, Strand, London, W.C. 2</i> .
1917 June 6.	N.R.	Gupta, Kisorimohan, M.A., Prof. of History, M.C. College. <i>Sylhet, Assam</i> .
1919 Mar. 5.	N.R.	Gupta, Sivaprasad. <i>Sera Upavana, Benares City</i> .
1915 Aug. 4.	R.	Gurner, Cyril Walter, I.C.S. <i>United Service Club, Calcutta</i> .
1901 Mar. 6.	N.R.	Habibur Rahman Khan, Raees. <i>Bhikanpur, District Aligarh</i> .
1892 Jan. 6.	F.M.	Haig, Lieut. Col. T. Wolseley, C.M.G., Indian Army, H.B.M.'s Legation. <i>Tehran, Persia</i> .
1907 Aug 7.	F.M.	*Haines, Henry Haselfoot, C.I.E., F.C.H., F.L.S., F.A.S.B. <i>Glen Ashton Wimborne, Dorset</i> .
1908 June 3.	R.	Hallowes, Kenneth Alexander Knight, M.A. (Cantab), A.R.S.M. (Lond.), F.G.S., A.Inst.M.M., F.R.M.S., F.Inst P., Mem. R.S.L. <i>Geological Survey of India, Calcutta</i> .

Date of Election.		
1916 Jan. 5.	N.R.	Hamilton, C. J. <i>Patna University, Patna.</i>
1920 May 5.	N.R.	Harcourt, Major E. S. <i>United Service Club, Calcutta.</i>
1912 May 1.	R.	Harley Alexander Hamilton, M.A. <i>The Madrasah, Calcutta.</i>
1908 April 1	R.	Harrison, Edward Philip, Ph.D., F.R.S.E. <i>The Observatory, Alipur, Calcutta.</i>
1921 May 4.	N.R.	Hartog, Philip Joseph, C.I.E., M.A., B.Sc., Vice Chancellor, <i>Dacca University, Ramna, Dacca.</i>
1897 Feb. 3.	F.M.	*Hayden, Sir Henry Herbert, Kt., C.I.E., D.Sc., B.A., B.E., B.A.T., F.G.S., F.A.S.B. <i>Oriental Club, Hanover Square, London.</i>
1911 June 7.	R.	Hedayat Husain, Shams-ul-Ulama Muhammad. 7-1, <i>Ramsanker Roy's Lane, Calcutta.</i>
1919 Nov. 5	N.R.	Hemraj, Raj Guru. <i>Dhokadol, Nepal.</i>
1908 June 3.	R.	Heron, Alexander Macmillan, D.Sc., F.G.S., Assoc. Inst. C.E. <i>Geological Survey of India, Calcutta.</i> [P.O., Assam.]
1920 Feb. 4.	N.R.	Hill, Harold Brian Cunningham. <i>Chabua</i>
1911 April 5.	N.R.	Hiralal, Rai Bahadur, Dy.-Commissioner (Retired). <i>Craddock Town, Nagpur, C.P.</i>
1891 July 1	F.M.	*Holland, Sir Thomas H., K.C.S.I., K.C.I.E., D.Sc., LL.D., F.R.S., F.A.S.B., Rector, Imperial College of Science and Technology. <i>South Kensington, London, S.W. 7.</i>
1921 Nov. 2.	R.	Hora, Sunder Lall. <i>Zoological Survey of India, Indian Museum, Calcutta.</i>
1873 Jan. 2.	L.M.	Houstoun, George L., F.G.S. <i>Johnstone Castle, Renfrewshire, Scotland.</i>
1918 Feb. 6.	N.R.	Hui, Rev. Sramana Wan. <i>Post Box No. 971, Rangzon.</i>
1911 Feb. 1.	R.	Insch, James. <i>C/o Messrs. Duncan Bros. &amp; Co., 101, Olive Street, Calcutta.</i>
1922 Nov. 1.	N.R.	Irfan, Mohammad, Prof. of Arabic and Persian. <i>Hooghly College, Hooghly.</i>
1920 Dec. 1.	R.	Ivanow, Wladimir. <i>C/o Asiatic Society of Bengal, 1, Park Street, Calcutta.</i>
1921 Feb. 2.	R.	Jain, Chhote Lall, M.R.A.S. 53/1, <i>Burtolla Street, Calcutta.</i>
1916 Jan. 5.	N.R.	Jain, Kumar Devendra Prasad, Secy., All-India Jain Association. <i>Arrah.</i>
1910 Aug. 3.	R.	Jain, Podamraj Raniwalla. 9, <i>Joggo-mohan Mullick's Lane, Calcutta.</i>

Date of Election.		
1907 Sept. 25.	N.R.	Jenkins, Owen Francis, I.C.S. <i>Badaun.</i>
1908 June 3	R.	Jones, Hurbert Cecil, A.R.S.M., A.R.C.S., F.G.S., Asst. Superintendent, Geological Survey of India. <i>Calcutta.</i>
1911 Sept. 1.	N.R.	Juggarao, Sree Raja Ankitam Venkata, Zemindar of Shermahamadpuram. <i>Daba-gardens, Vizagapatam.</i>
1911 Nov. 1.	N.R.	Kamaluddin Ahmad, Shams-ul-Ulama, M.A. <i>The University, Lucknow.</i>
1891 Feb. 4.	N.R.	Kapur, Ban Behari. Raja Bahadur, C.S.I. <i>Ban Abash, Burdwan.</i>
1920 July 7.	R.	Kar, Sites Chandra. 47, <i>Corporation Street, Calcutta.</i>
1920 Feb. 4.	R.	Keir, W. I., Asst. Architect to the Govt. of Bengal. <i>Writers' Buildings, Calcutta.</i>
1910 May 4.	R.	*Kemp, Stanley W., B.A., D.Sc., F.A.S.B. 27, <i>Chowringhee Road, Calcutta.</i>
1882 Mar. 1.	N.R.	Kennedy, Pringle, M.A., B.L. <i>Mozafferpur.</i>
1920 Mar. 3.	R.	*Khuda Bukhsh, S., F.A.S.B., Bar.-at-Law. 5, <i>Elliott Road Calcutta.</i>
1909 April 7.	R.	Kilner, John Newport, M.B., L.R.C.S., L.R.C.P. 14, <i>Garden Reach, Calcutta.</i>
1910 Mar. 2.	R.	Kirkpatrick, W. <i>Chartered Bank Buildings, Calcutta.</i>
1920 July 7.	R.	Knowles, Robert, Major, I.M.S., M.R.C.S., L.R.C.P., B.A. (Cantab). <i>Calcutta School of Tropical Medicine, Central Avenue, Calcutta.</i>
1921 Dec. 7.	N.R.	Kumar, Anand Kumar. <i>Fairfield, Firozepore Road, Lahore.</i>
1920 Mar. 3.	R.	Lahiri, Jagadindranath. 91, <i>Upper Circular Road, Calcutta.</i>
1887 May 4.	L.M.	Lanman, Charles Rockwell. 9, <i>Farrar Street, Cambridge, Massachusetts, U.S. America.</i>
1919 Nov. 5.	R.	Larmour, F. A. 60, <i>Bentlnck Street, Calcutta.</i>
1889 Mar. 6.	L.M.	*La Touche, Thomas Henry Digges, M.A., F.G.S., F.A.S.B. 230, <i>Hills Road, Cambridge, England.</i>
1914 Aug. 5.	R.	Law, Bimala Charan, M.A., B.L., F.R.Hist. S., M.R.A.S. 24, <i>Sukea Street, Calcutta.</i>
1911 Feb. 1.	R.	Law, Narendra Nath, M.A., B.L., P.R.S., Ph.D. 96, <i>Amherst Street, Calcutta.</i>
1914 July 1.	R.	Law, Satya Churn, M.A., B.L., F.Z.S., M.B.O.U. 24, <i>Sukea St., Calcutta.</i>

Date of Election.		
1902 July 2.	N.R.	Leake, Hugh Martin, Sc.D., F.L.S. <i>Nawabgunj, Cawnpore.</i>
1918 June 5.	N.R.	Lees, Donald Hector, I.C.S. <i>Jalpaiguri.</i>
1911 May 3.	R.	Lomax, C. E., M.A. <i>La Martinière, Calcutta.</i>
1906 Oct. 31.	N.R.	Luard, Lieut.-Col., Charles Eckford, C.I.E., M.A. (Oxon). <i>C/o Grindlay &amp; Co., London and Bombay.</i>
1870 April 7.	L.M.	Lyman, B. Smith. 708, <i>Locust Street, Philadelphia, U.S. America.</i>
1905 Aug. 2.	R.	*McCay, David, Lieut. Col., M.D., B.Ch., B.A.O. (R.U.L.), M.R.C.P. (Lond.). F.A.S.B., I.M.S. 24, <i>Park Street, Calcutta,</i>
1893 Jan. 11.	L.M.	MacLagan, The Hon Sir Edward Douglas, K.C.S.I., K.C.I.E., Governor of the Punjab. <i>Lahore.</i>
1913 Mar. 5.	N.R.	MacMahon, P. S., M.Sc., <i>Canning College, Lucknow.</i>
1893 Jan. 11.	L.M.	Madho Rao Scindia, His Highness Maharajah Colonel Sir, Alijah Bahadur, G.C.S.I., G.C.V.O., A.D.C., LL.D., Maharajah of Gwalior. <i>Jai Bilas, Gwalior.</i>
1916 June 7.	N.R.	Mahajan, Surya Prasad. <i>Murarpur, Gaya.</i>
1920 Mar. 3.	R.	Mahalanobis, Prof. P. C., B.Sc., M.A. 210, <i>Cornwallis Street, Calcutta.</i>
1906 Dec. 5.	R.	Mahalanobis. Subodh Chandra, B.Sc. (Edin.) F.R.S.E., I.E.S., Prof., Presidency College. 210, <i>Cornwallis Street, Calcutta.</i>
1911 Mar. 1.	R.	Mahatap, The Hon. Sir Bijoy Chand, K.C.S.I., Maharajadhiraj of Burdwan. 6, <i>Alipur Lane, Calcutta.</i>
1918 Aug. 7.	R.	Maitra, Jatindra Nath, Physician and Surgeon. 68/A, <i>Beadon St., Calcutta.</i>
1918 Feb. 6.	N.R.	Maitra, Sisir Kumar, Principal, Indian Institute of Philosophy. <i>Amalner, Bombay Presidency.</i>
1920 June 2	R.	Majumdar, Nani Gopal, M.A., Lecturer, Calcutta University. 70, <i>Russa Road, North, Calcutta.</i>
1916 Feb. 2.	R.	Majumdar, Narendra Kumar, M.A., Asst. Prof., Calcutta University. <i>Calcutta.</i>
1912 Jan. 10.	N.R.	Majumdar, Rai Jadunath, Bahadur, M.A., B.L., M.L.A., C.I.E., Vakil. <i>Jessore.</i>
1913 June 4.	N.R.	Majumdar, Ramesh Chandra, M.A., Ph.D., Prof., Dacca University. <i>Ramna, Dacca.</i>

Date of Election.		
1918 Feb. 6.	R.	Manen, Johan van, Offg. Librarian, Imperial Library. <i>Calcutta.</i>
1920 Jan. 5.	N.R.	Mangalik, Murari Sharan, Editor, "The Lalita." <i>Sivasadan, Meerut.</i>
1901 June 5.	N.R.	Mann, Harold Hart, D.Sc., M.Sc., F.I.C., F.L.S., Director of Agriculture, Bombay Presidency. <i>Poona.</i>
1899 Aug. 30.	L.M.	Mannu Lal, Rai Bahadur, Retired Civil Surgeon. <i>Rai Bareilly.</i>
1919 Oct. 10.	N.R.	Manry, Rev. J. C. <i>Ewing Christian College, Allahabad.</i>
1905 Dec. 6.	F.M.	Marsden, Edmund, B.A., F.R.G.S., F.R.H.S., F.R.S.L., M.R.A.S. 12, <i>Ellerdale Road, Hampstead, London.</i>
1919 Oct. 29.	N.R.	Marten, John Thomas. <i>Hotel Cecil, Simla.</i>
1920 Aug. 4.	A.	Martin, Harold. 6 & 7, <i>Clive Street, Calcutta.</i>
1920 Aug. 4.	A.	Martin, Oswald. 6 & 7, <i>Clive Street, Calcutta.</i>
1919 June 4.	N.R.	Matthai George. <i>Govt. College, Lahore.</i>
1920 Dec. 1.	R.	Mazumdar, B. C. 33/1/C, <i>Lansdowne Road, Calcutta.</i>
1922 Feb. 1.	R.	Megaw, Lieut.-Col. J. W. D., I.M.S., Director, Calcutta School of Tropical Medicine. 15, <i>Kyd Street, Calcutta.</i>
1886 Mar. 3.	L.M.	Mehta, Roostumjee Dhunjeebhoy, C.I.E., J.P., F.R.S.A. 9, <i>Rainey Park, Ballygunge, Calcutta.</i>
1884 Nov. 5.	N.R.	*Middlemiss, Charles Stewart, C.I.E., F.R.S., B.A., F.G.S., F.A.S.B. <i>Srinagar, Kashmir.</i>
1884 Sep. 3.	R.	Miles, William Henry, F.E.S. 7, <i>King Edward Court, Chowringhee, Calcutta.</i>
1912 June 5.	N.R.	Misra, Champaram, B.A., Dy. Director of Industries. <i>Cawnpore, U.P.</i>
1919 Nov. 5.	N.R.	Misra, Pramatha Nath, M.R.A.S., Pleader. <i>Malda.</i>
1911 July 5.	N.R.	Misra, Syama Behari, B.A., P.C.S., Rai Bahadur, Pandit. M.R.S.A., M.R.A.S., F.T.S., Retired Dy. Director, Land Records, U.P. <i>Partabgarh, Cudh.</i>
1916 Nov. 1.	R.	Mitra, Adar Chandra, B.L. 164, <i>Bow Street, Calcutta.</i>
1919 June 4.	R.	Mitra, Amulya Chandra, Rai Bahadur, Medical Practitioner. <i>Amrita Kutir, Burdwan.</i>
1906 June 6.	R.	Mitra, Kumar Manmatha Nath. 34, <i>Shampukur Street, Calcutta.</i> [ <i>Calcutta.</i> ]
1919 April 2.	R.	Mitra, Panchanan. <i>Bangabasi College,</i>

Date of Election.		
1920 Dec. 1.	N.R.	Mohammed Akbar Khan, The Hon'ble, Major, C.I.E., I.A. <i>Chief of Hoti, N.W.F.P.</i>
1916 Feb. 2.	R.	Mohammad Yusuf, Hashimi, Khan Sahib, M.A., M.R.A.S. <i>The Madrasah, 21, Wellesley Square, Calcutta.</i>
1895 July 3.	F.M.	Monahan, Francis John, I.C.S. <i>Harrington Mansions, Calcutta.</i>
1898 May 4.	R.	Mookerjee, Sir R. N., K.C.I.E., K.C.V.O. <i>7, Harrington Street, Calcutta.</i>
1906 Dec. 5.	N.R.	More, Major James Carmichael, 51st Sikhs. <i>Kuwait, Persian Gulf.</i>
1919 Feb. 5.	R.	Moreno, Henry William Bunn, M.A., Ph.D., M.R.A.S. <i>13, Wellesley Street, Calcutta.</i>
1912 Jan. 10.	R.	Muhammad Kazim Shirazi, Aga. <i>23, Lower Chitpur Road, Calcutta.</i>
1922 Feb. 1.	R.	Muir, Dr. E., M.D., F.R.C.S. (Edin.), Calcutta School of Tropical Medicine (Leprosy Research Worker). <i>Calcutta.</i>
1909 Mar. 3.	R.	Mukerjee, Brajalal, M.A., Solicitor. <i>12, Old Post Office Street, Calcutta.</i>
1899 Sept. 29	R.	Mukerjee, Jateendra Nath, B.A., Solicitor. <i>4, Hastings Street, Calcutta.</i>
1916 Mar. 1.	R.	Mukerjee Prabhat Kumar, Bar-at-Law. <i>14A, Ramtanoo Bose Lane, Calcutta.</i>
1921 Feb. 2.	R.	Mukerjee, Ramaprasad, M.A., B.L. <i>77, Russa Road, Bhowanipore.</i>
1921 Feb. 2.	R.	Mukerjee, Subodh Chandra, M.A. <i>97/1, Musjid Bari Street, Calcutta.</i>
1919 Feb. 5	N.R.	Mukerjee, Taraknath. <i>Falka Colliery, Nirshachate P.O., Mambhum.</i>
1922 July 5.	N.R.	Mukerji, Radhakumud, Prof. of Indian History, University of Lucknow. <i>Lucknow.</i>
1894 Aug. 30.	R.	Mukharjee, Sivnarayan, Zamindar of Uttarpara. <i>Uttarpara, (near Calcutta).</i>
1886 May 5.	L.M.	*Mukhopadhyaya, The Hon. Justice Sir Asutosh, Kt., C.S.I., M.A., D.L., D.Sc., F.R.S.E., F.R.A.S., F.A.S.B. <i>77, Russa Road (North), Bhowanipur, Calcutta.</i>
1908 Feb. 5.	R.	Mukhopadhyaya, Girindra Nath, Bhisagacharya, B.A., M.D. <i>156, Haris Mukerjee Road (North), Bhowanipur, Calcutta.</i>
1892 Dec. 7.	R.	Mukhopadhyaya, Panchanan, Vidya-bhusana. <i>46, Bechoo Chatterji Street, Calcutta.</i>
1921 June 1.	N.R.	Muzammil-ullah Khan, Mohammad, Hon. Nawab, Khan Bahadur, O.B.E.,

Date of Election.		Rais, Bhikampur. <i>Bhikampur, Dist. Aligarh, U.P.</i>
1906 Mar. 7.	R.	Nahar, Puran Chand, Solicitor. 48, <i>Indian Mirror Street, Calcutta.</i>
1918 Sept. 25.	N.R.	Narayan, Victor Nityendra, Maharaj Kumar of Cooch Behar. <i>Cooch Behar</i>
1916 July 5.	R.	Naseer Hosein Khayal, Syed. 78, <i>Prinsep Street, Calcutta</i>
1914 Feb. 4.	R.	Nawab Ali Chaudhury, The Hon. Nawab Syed. 27, <i>Weston Street, Calcutta.</i>
1901 Mar. 6.	N.R.	Nevill, Lieut.-Col. Henry Rivers, I.C.S. <i>Cranagh, Simla.</i>
1889 Aug. 29.	L.M.	Nimmo, John Duncan. <i>C/o Messrs. Walter Duncan &amp; Co., 137, West George Street, Glasgow.</i>
1913 July 2	N.R.	Norton, E. L., I.C.S., District Magistrate. <i>Gorakhpur, U.P.</i>
1915 April 7.	A.	Otani, Count Kozui. <i>C/o Consulate-General of Japan, Calcutta.</i>
1907 July 3.	A.	Page, William Walter K., Solicitor. <i>Europe (c/o Messrs. Pugh &amp; Co., Calcutta).</i>
1920 Aug. 4.	N.R.	Panikker, Padmanabha, N. B.A., F.I.S., Inspector of Fisheries. <i>Travancore.</i>
1904 Aug. 3.	N.R.	Parasnis, Rao Bahadur Dattatraya Balwant. <i>Satara.</i>
1919 Nov. 5.	R.	*Pascoe, Edwin Hall, M.A., Sc.D. (Cantab), D.Sc. (Lond.), F.G.S., F.A.S.B., Director. Geological Survey of India. 27, <i>Chowringhee, Calcutta.</i>
1906 Dec. 5.	A.	Peart, Major Charles Lubé, C.I.E., 106th Hazara Pioneers. <i>Europe (c/o Board of Examiners).</i>
1888 June 6.	L.M.	Pennell, Aubray Percival, B.A., Bar.-at-Law. <i>Rangoon.</i>
1889 Nov. 6.	L.M.	*Phillott, Lieut.-Col. Douglas Craven, M.A., Ph.D., F.A.S.B., M.R.A.S., Indian Army (Retired). <i>Felsted, Essex, England.</i>
1914 Nov. 4.	A.	Pickford, Alfred Donald. 2, <i>Hare Street, Calcutta.</i>
1904 June 1.	R.	Pilgrim, Guy E., D.Sc., F.G.S. <i>Geological Survey of India, Calcutta.</i>
1920 April 7.	N.R.	Pradhan, Hariprasad. <i>Pradhan Cottage, Darjeeling.</i>
1918 April 3.	R.	Prashad, Bains, D.Sc., F.Z.S., Zoological

Date of Election.		
		Survey of India. <i>Indian Museum, Calcutta.</i>
1914 Mar. 4.	A.	Raffin, Alain. <i>Europe.</i>
1880 April 7.	N.R.	Rai, Bepin Chandra. <i>Giridih, Chota Nagpur.</i>
1895 Aug. 29.	N.R.	Rai Chaudhuri, Jatindranath, M.A., B.L., Zemindar. <i>Taki, Jessore.</i>
1920 May 7.	N.R.	Ram, Kamakhya Dat, Member, Benares Hindu University Court. <i>Rai Sri Ram's House, Golagunj, Lucknow.</i>
1922 Feb. 1.	R.	Raman, Chandrasekhara Venkata, M.A., D.Sc. (Hon.). 210, <i>Bowbazar Street, Calcutta.</i>
1917 June 6.	N.R.	Rangaswami Aiyangar, K. V., Rao Bahadur, Prof. of History and Economics, H.H. The Maharaja's College. <i>Trivandrum.</i>
1905 Jan. 4.	N.R.	Rankin, James Thomas, I.C.S., Commissioner. <i>Dacca.</i>
1921 Dec. 2.	R.	Ranking, Colonel Geo. S., C.M.G. <i>United Service Club, Calcutta.</i>
1921 Jan. 5.	N.R.	Ray, Maharaja Jagadishnath, Maharaja of Dinajpore. <i>Dinajpore.</i>
1917 May 2.	R.	Ray, Kumud Sankar, M.A., B.Sc., M.B., Ch.B. (Edin.). 44, <i>European Asylum Lane, Calcutta.</i>
1890 Mar. 5.	R.	*Ray, Sir Prafulla Chandra, Kt., D.Sc., F.A.S.B. <i>University College of Science, Calcutta.</i>
1919 Feb. 5.	R.	Ray, Sasadhar. 17, <i>Balaram Bose Ghat Road, Bhowanipur, Calcutta.</i>
1920 Mar. 3.	N.R.	Raye, Narendra Nath. <i>Bhagalpur.</i>
1918 April 3.	F.M.	Robinson, Herbert C., Director of Museums and Fisheries, Federated Malay States. <i>Kuala Lumpur.</i>
1900 April 4.	A.	*Rogers, Lieut.-Col. Sir Leonard, Kt., C.I.E., M.D., B.S., F.R.C.P., F.R.C.S., F.A.S.B., F.R.S., I.M.S. <i>Europe (c/o Medical College, Calcutta).</i>
1920 Mar. 3.	R.	Ronaldshay, The Right Hon. the Earl of, Governor of Bengal. <i>Calcutta.</i>
1901 Dec. 4.	F.M.	*Ross, Sir Edward Denison, Kt., C.I.E., Ph.D., F.A.S.B., Director, School of Oriental Studies. <i>London.</i>
1918 July 3.	R.	Roy, Dr. Bidhan Chandra, B.A. (Cal.), M.D., F.R.C.S., M.R.C.P. (Lond.). 36, <i>Wellington Street, Calcutta.</i>

Date of Election.		
1921 Sept. 7.	R.	Roy, Hem Chandra. 76/1A, Upper Circular Road, Calcutta.
1903 July 1.	L.M.	Roy, Maharaja Jagadindranath, Bahadur. 6, Lansdowne Road, Calcutta.
1915 Oct. 27.	R.	Roy, Kaviraj Jamini Bhusan, Kaviratna, M.A., M.B. 46, Beadon Street, Calcutta.
1910 Sept. 7.	R.	Roy, Kumar Sarat Kumar, M.A., M.R.A.S., 52, Police Hospital Road, Intally P.O., Calcutta.
1920 July 7.	R.	Roy-Chaudhuri, Hem Chandra, M.A., Ph.D. 43/2, Amherst Street, Calcutta.
1915 May 5.	N.R.	Rushbrook-Williams, L. F., M.A., B.Litt., O.B.E., M.R.A.S., F.R.Hist.S. Home Department, Government of India, India.
1916 April 5.	N.R.	Saha, Radhika Nath, M.R.A.S., Medical Practitioner. 16, Lachmikundu, Benares City, U.P.
1913 April 2.	N.R.	Sahay. Rai Sahib Bhagvati, M.A., B.L., Offg. Inspector of Schools. Bhagalpur.
1919 Sept. 3.	N.R.	Saksena, Debi Prasad, Sub-Dy. Inspector of Schools. 66, Ganesh Madhia, Jhansi City, U.P.
1922 Nov. 1.	N.R.	Sarkar, Suresh Chandra, Dy. Magistrate and Dy. Collector. B. & O. Barganda, Giridih.
1909 Mar. 3.	R.	Sarvadhikary, Sir Deva Prasad, Kt., C.I.E., M.A., B.L., F.C.U., LL.D. (Aberdeen), LL.D. (St. Andrews), Suriratna, Vidyaratnaker, Jnanasindhu. 20, Suri Lane, Intally P.O., Calcutta.
1917 Dec. 5.	R.	Sastri, Ananta Krishna. 56/1A, Sri-gopal Mullick Lane, Calcutta.
1922 May 3.	N.R.	Schomberg, Lieut.-Col. Reginald C. F., Seaforth Highlanders. Meerut.
1919 April 2.	R.	Sen, A. C. 80, Lower Circular Road, Calcutta.
1902 May. 7.	R.	Sen, Jogindranath. Vidyaratna, M.A., Vidyabhusan. 32, Prasanna Kumar Tagore Street, Calcutta.
1914 April 1.	N.R.	Sen-Gupta, Dr. Nares Chandra, M.A., D.L. Ramna P.O., Dacca.
1897 Dec. 1.	R.	Seth, Mesrovb Jacob, M.R.A.S., M.S.A., F.R.S.A. 19, Lindsay Street, Calcutta.
1911 July 5.	N.R.	*Sewell, Robert Beresford Seymour, Major, I.M.S., M.A., M.R.C.S., L.R.C.P., F.Z.S., F.L.S. C/o Indian Museum, Calcutta.
1921 Nov. 2.	N.R.	Shah, Emdadul Haq, M.L.C. Vill. Bhowk-

Date of Election.		
		<i>sar, P.S. Chandina, P.O. Mudafargar Dist. Tippera.</i>
1885 Feb. 4.	L.M.	*Shastri, Haraprasad, Mahamahopadhyaya, C.I.E., M.A., F.A.S.B., Hon. Member, R.A.S. 26, <i>Pataldanga Street, Calcutta.</i>
1909 Jan. 6.	A.	Shirreff, Alexander Grierson, B.A., I.C.S. <i>Europe (c/o India Office).</i>
1913 Dec. 3.	R.	Shorten, Captain James Alfred, B.A., M.B., B.Ch., I.M.S. <i>Medical College, Calcutta.</i>
1908 Mar. 4.	R.	Shujaat Ali, Nasirul Mamalik Mirza, Khan Bahadur, Acting Consul-General for Persia. 10, <i>Hungerford Street, Calcutta.</i>
1916 Aug. 2.	N.R.	Shukla, Ashwani Kumar, B.A., LL.B., Council Member, Mewar State. <i>Udaipur.</i>
1902 Feb. 5.	N.R.	Shyam Lal, lala M.A., LL.B., M.R.A.S., M.A.S.B., Dy. Collector and Ilakadar (Retd.). <i>Nawabgunj, Cawnpore, U.P.</i>
1913 Mar. 5.	L.M.	*Simonsen, John Liouse, D.Sc., F.I.C., F.A.S.B. <i>Forest Research Institute and College, Dehra Dun.</i>
1909 April 7.	A.	*Simpson, George Clarke, D.Sc., F.A.S.B. <i>Europe (c/o Meteorological Department, Simla).</i>
1918 Feb. 6.	N.R.	Singh Badakaji, Marichiman. 38, <i>Khichapokhari, Katmandu, Nepal.</i>
1894 July 4.	N.R.	Singh, Raja Kushal Pal, M.A. <i>Narki.</i>
1899 Aug. 29.	N.R.	Singh, H.H. The Maharaja Sir Prabhu Narain, Bahadur, G.C.I.E., G.C.S.I., Maharaja of Benares. <i>Ramnagar Fort, Benares.</i>
1909 April 7.	N.R.	Singh, Prithwipal, Raja, F.R.G.S., F.R.S.A., F.T.S., Talukdar of Surajpur. <i>Chandras Palace, Hathanda P.O., Dist. Barabanki Oudh</i>
1899 Nov. 6.	L.M.	Singh, H. H. The Hon'ble Maharajadhiraja Sir Rameshwar, G.C.I.E., K.B.E., D.Litt., F.R.A.S., F.P.U. <i>Darbhanga.</i>
1919 Nov. 5.	N.R.	Singh, Shyam Narayan, M.B.E., M.L.A., Rai Bahadur, Bihar and Orissa Civil Service <i>Patna, E.I.R.</i>
1894 Feb. 7.	N.R.	Singh, H.H. The Maharaja Vishwa Nath, Bahadur. <i>Chhatturpur, Bundelkhund.</i>
1918 Feb. 6.	R.	Singha, Kumar Arun Chandra, M.A. 120/3, <i>Upper Circular Road, Calcutta.</i>
1912 May 1.	N.R.	Singha, Rai Lalit Mohan, Rai Bahadur

Date of Election.		
		M.L.C., M.R.A.S. <i>Zemindar of Chakdighi, Dist. Burdwan.</i>
1918 April 3.	N.R.	Sinha, Raja Bahadur Bhupendra Narayan, B.A. <i>Nasipur Rajbati, Nasipur P.O.</i>
1922 Feb. 1.	R.	Sinha, Kumar Gangananda, M.A., Zemindar. 7, <i>Dedarbakhsh Lane, Calcutta.</i>
1921 Feb. 2.	N.R.	Sinha, Gopinath, B.A., M.R.A.S. (Lond.), Zemindar and Rais. <i>Mohalla, Quannungu, Bareilly, U.P.</i>
1913 July 2.	N.R.	Sinha, Rudra Datta, M.A., LL.B., M.R.A.S. <i>Nazirabad Road, Lucknow.</i>
1912 Sept. 5.	N.R.	Singhi, Bahadur Singh. <i>Azimgunj, Murshidabad.</i>
1916 July 5.	R.	Sircar, Ganapati, Vidyaratna. 69, <i>Belia-ghatta Main Road, Calcutta.</i>
1913 July 2.	N.R.	Siva Prasada, B.A., M.R.A.S., U.P.C.S. (Retired). <i>Civil Lines, Fyzabad, Oudh.</i>
1920 June 2.	R.	Skinner, S. A., Engineer and Director, Messrs. Jessop & Co., Ltd. 93, <i>Olive Street, Calcutta.</i>
1901 Dec. 4.	N.R.	*Spooner, David Brainerd, O.B.E., Ph.D., F.A.S.B., Dy. Director-General, Archaeology. <i>Benmore, Simla E.</i>
1904 Sept. 28.	A.	Stapleton, Henry Ernest, M.A., B.Sc. <i>Ramna, Dacca.</i>
1908 Dec. 2.	R.	Steen, Major Hugh Barkley, M.B., I.M.S. 1, <i>Upper Wood Street, Calcutta.</i>
1922 Feb. 1.	R.	Stewart, Major A. D., I.M.S., Director, Public Health Laboratories, School of Tropical Medicine and Hygiene. <i>Calcutta.</i>
1916 July 5.	R.	Street, W. S. <i>C/o Messrs. Shaw Wallace &amp; Co., Calcutta.</i>
1922 Sept. 6.	R.	Strickland, Lieut.-Col. C. A., I.M.S., Prof. of Medical Entomology, School of Tropical Medicine. <i>Calcutta.</i>
1922 Nov. 1.	R.	Strickland-Anderson, Mrs., Composer and Author. <i>Suite 143, The Grand Hotel, Calcutta.</i>
1921 Mar. 2.	R.	Sturrock, Lieut.-Col. G. C., I.M.S. 14, <i>Park Mansions, Calcutta.</i>
1907 June 5.	R.	*Suhrawardy, Abdullah Al-Ma'mun, Iftikharul Millat, M.A., D.Litt., LL.D., F.A.S.B., Barrister-at-Law. 56, <i>Mirzapur Street, Calcutta.</i>
1920 Jan. 7.	N.R.	Suhrwardy, Hassan, Major, M.D., F.R.C.S., I.T.F.M.C. <i>Gaya, E.I.Ry.</i>
1920 Mar. 3.	N.R.	Sundara Raj, Bungard, M.A. (Madras)

Date of Election.		
1916 Sept. 27.	A.	C/o Madras Fisheries Bureau, Madras. Sutherland, Rev. W. S.. D.D., Scottish Universities Mission. <i>Kalimpong, Dist. Darjeeling.</i>
1919 June 4.	A.	Tacchella, C. F. H. <i>Europe (c/o Indian Institute of Science, Bangalore).</i>
1909 Jan. 6.	R.	Tagore, Kshitindranath, B.A. Tatwanidhi. 5/1B, Baranashi Ghose 2nd Lane, Jorasanko, Calcutta.
1914 April 1.	R.	Tagore, Prafulla Nath. 1, Darpanarain Tagore Street, Calcutta.
1898 April 6.	R.	Tagore, The Hon. Maharaja Sir Pradyot Coomar, Bahadur, Kt <i>Pathuriaghatta, Calcutta.</i>
1904 July 6.	F.M.	Talbot, Walter Stanley, I.C.S. C/o Messrs. H. S. King & Co., 9, Pall Mall, London, S.W.
1893 Aug. 31.	N.R.	Tate, George Passman. 56, Cantonment, Bareilly, U.P.
1906 Dec. 6.	L.M.	Tek Chand, The Hon. Dewan, O.B.E., I.C.S., B.A., M.R.A.S., Barrister-at-Law, Commissioner, Ambala Divn. <i>Ambala Cantt., Punjab.</i>
1878 June 5.	F.M.	Temple, Colonel Sir Richard Carnac, Bart., C.I.E., Indian Army. 9 Pall Mall, London.
1909 Aug. 4.	N.R.	Thompson, John Perronet, M.A., I.C.S., Chief Secretary, Govt. of the Punjab. <i>Lahore.</i>
1904 June 1.	R.	*Tipper, George Howlett, M.A., F.G.S., M.I.M.M., F.A.S.B. C/o Geological Survey of India, Calcutta.
1861 June 5.	L.M.	Tremlett, James Dyer, M.A., I.C.S. (Retired). <i>Dedham, Essex, England.</i>
1917 Dec. 5.	N.R.	Tripathi, Ramprasad, Reader in Modern Indian History. <i>The University, Allahabad.</i>
1894 Sept. 27.	R.	Vasu, Nagendra Nath, Rai Sahib, Prachyavidyamaharnava, Siddhanta-Varidhi, Tattva-Chintamani, Sabda-Ratnakara, etc. <i>Vishvakosha Office, 9, Visvakos Lane, Calcutta.</i>
1922 Nov. 1.	N.R.	Vidgolankar, Prannath, Prof. of History and Economics, B.H. University. <i>Benares.</i>

Date of Election.		
1901 Mar. 6.	F.M.	*Vogel, Jean Philippe, Litt.D., F.A.S.B. <i>The University, Leiden, Holland.</i>
1894 Sept. 27.	L.M.	Vost, Lieut.-Col. William, I.M.S. 26, <i>Crystal Palace Park Road, Sydenham, London, S.E. 26.</i>
1902 Oct. 29.	R.	*Vredenburg, Ernest, B.L., B.Sc., A.R.S.M., A.R.C.S., F.G.S., F.A.S.B. <i>Europe (c/o Geological Survey of India, Calcutta).</i>
1907 July 3.	R.	Walker, Harold, A.R.C.S., F.G.S., A.M., Inst.M., Asst. Superintendent, Geological Survey of India. <i>Calcutta.</i>
1918 April 3.	N.R.	Wall, Frank, Colonel, C.M.G., C.M.Z.S., F.L.S., H.C.Z.S., India. <i>C/o H. S. King Co., 9, Pall Mall, London.</i>
1911 Feb. 1.	N.R.	Waters, Harry George, Lieut.-Col., V.D., D.P.H., D.T.M. & H. (Cantab), Chief Medical Officer, E.I.Ry. <i>Allahabad.</i>
1909 Dec. 1.	N.R.	Webster, J. E., I.C.S. <i>Sylhet, Assam.</i>
1913 April 2.	A.	White, Bernard Alfred. <i>Chartered Bank Buildings, Calcutta.</i>
1915 Jan. 6.	N.R.	Whitehouse, Richard H., D.Sc., I.E.S. <i>Central Training College, Lahore.</i>
1906 Sept. 19.	N.R.	Whitehead, Richard Bertram, I.C.S. <i>Rupar, Umbala, Punjab.</i>
1919 May 7.	N.R.	Wills, Cecil Upton, B.A., I.C.S. <i>Nagpur.</i>
1906 Mar. 7.	N.R.	Woolner, Alfred Cooper, M.A. <i>Panjab University, Lahore.</i>
1908 April 1.	R.	Wordsworth, William Christopher. <i>Presidency College, Calcutta.</i>
1894 Aug. 30.	N.R.	Wright, Henry Nelson, I.C.S., District Judge. <i>Bareilly.</i>
1911 Aug. 2.	A.	Young, Gerald Mackworth, B.A., I.C.S. <i>Europe (c/o India Office).</i>
1906 June 6.	F.M.	Young, Mansel Charles Gambier. <i>Khagaul P.O., Dinapore, E.I.R.</i>
1910 April 6.	N.R.	Young, Captain Thomas Charles McCombie, M.B., I.M.S. <i>Shillong, Assam.</i>
1919 Feb. 5.	N.R.	Yazdani, Ghulam, M.A. <i>Hyderabad, Deccan.</i>
1919 July 2.	N.R.	Zafar Hasan. <i>Archæological Survey of India, Delhi.</i>

SPECIAL HONORARY CENTENARY MEMBERS.

Date of Election.	
1884 Jan. 15.	Revd. Professor A. H. Sayce, Professor of Assyriology, Queen's College. <i>Oxford, England.</i>
1884 Jan. 15.	Monsieur Émile Senart. 18, <i>Rue François Ier, Paris, France.</i>

HONORARY FELLOWS.

Date of Election.	
1879 June 4.	Dr. Jules Janssen. <i>Observatoire d'Astronomie Physique de Paris, France.</i>
1896 Feb. 5.	Professor Charles Rockwell Lanman. 9, <i>Farrar Street, Cambridge, Massachusetts, U.S. America.</i>
1899 Dec. 6.	Professor Edwin Ray Lankester, M.A., LL.D., F.R.S. <i>British Museum (Nat. Hist.), Cromwell Road, London, S.W.</i>
1904 Mar. 2.	Sir Ramkrishna Gopal Bhandarkar, M.A., Ph.D., LL.D., K.C.I.E. <i>Sangamashrama, Poona.</i>
1904 Mar. 2.	Sir George Abraham Grierson, K.C.I.E., Ph.D., D.Litt., LL.D., F.B.A., I.C.S. (Retired). <i>Rathfarnham, Camberley, Surrey, England.</i>
1906 Mar. 7.	The Most Hon'ble Marquess Curzon of Kedleston, K.G., M.A., D.C.L., F.R.S. 1, <i>Carlton House Terrace, London, S.W.</i>
1908 July 1.	Lieut.-Col. Henry Haversham Godwin-Austen, F.R.S., F.Z.S., F.R.G.S. <i>Nora Godalming, Surrey, England.</i>
1911 Sept. 6.	Alfred William Alcock, C.I.E., M.B., LL.D., F.R.S. <i>Heathlands, Belvedere, Kent.</i>
1911 Sept. 6.	Edward Granville Browne, M.A., M.B. (Cambridge), F.R.C.P., M.R.C.S. (London), F.B.A. <i>Pembroke College, Cambridge.</i>
1911 Sept. 6.	Mahamahopadhyaya Kamakhyanath Tarkavagisa. 111/4, <i>Shambazar Street, Calcutta.</i>
1915 Aug. 4.	Prof. Sir Paul Vinogradoff, F.B.A., D.C.L. 19, <i>Linton Road, Oxford, England.</i>
1915 Aug. 4.	Sir Joseph John Thomson, Kt., O.M., M.A., Sc.D., D.Sc., LL.D., Ph.D. <i>Trinity College, Cambridge, England.</i>
1916 Dec. 6.	Dr. G. A. Boulenger, F.R.S., LL.D., British Museum (Nat. Hist.). <i>Cromwell Road, London, S.W.</i>

Date of Election.	
1917 May 2.	Herbert Allen Giles, Professor. 10, <i>Selwyn Gardens, Cambridge, England</i>
1920 Feb. 4.	Sir Charles Eliot, K.C.M.G., C.B., M.A., LL.D., D.C.L. <i>H.M. Ambassador at Tokyo.</i>
1920 Feb. 4.	Prof. T. W. Rhys Davids, LL.D., Ph.D., D.Sc. <i>University College, London.</i>
1920 Feb. 4.	Prof. Sylvain Lévi <i>Collège de France, Paris.</i>
1920 Feb. 4.	Sir Aurel Stein, K.C.I.E., Ph.D., D.Litt., D.Sc., D.O.L., F.B.A. <i>Srinagar, Kashmir.</i>
1920 Feb. 4.	Prof. A. Foucher, D.Litt. <i>University of Paris.</i>
1920 Feb. 4.	Arthur Keith, Esq., M.D., F.R.C.S., LL.D., F.R.S., Royal College of Surgeons of England. <i>Lincoln's Inn Fields, London, W.C. 2.</i>
1920 Feb. 4.	R. D. Oldham, Esq., F.R.S., F.G.S., F.R.G.S. 1, <i>Broomfield Road, Kew, Surrey, England.</i>
1920 Feb. 4.	Sir David Prain, Kt., C.M.G., C.I.E., M.A., M.B., LL.D., F.R.S.E., F.L.S., F.R.S., F.Z.S., M.R.I.A. <i>Royal Botanic Gardens, Kew, Surrey, England.</i>
1920 Feb. 4.	Sir Joseph Larmor, Kt., M.P., M.A., D.Sc., LL.D., D.C.L., F.R.S., F.R.A.S. <i>Cambridge.</i>
1920 Feb. 4.	Sir James Frazer, Kt., D.C.L., LL.D., Litt.D. 1, <i>Brick Court, Temple, London, E.C. 4.</i>
1920 Feb. 4.	Prof. J. Takakusu. <i>Imperial University of Tokyo, Japan.</i>
1922 June 7.	Prof. W. H. Perkin, Ph.D., Sc.D., LL.D., F.R.S.
1922 June 7.	Sir Thomas Holland, K.C.S.I., K.C.I.E., D.Sc., F.R.S.
1922 June 7.	Sir Leonard Rogers, Kt., C.I.E., M.D., B.S., F.R.C.P., F.R.S., I.M.S.
1922 Nov. 1.	Prof. A. C. Macdonell, M.A., Ph.D.

## FELLOWS.

Date of Election.	
1910 Feb. 2.	N. Annandale, Esq., D.Sc., C.M.Z.S., F.L.S.
1910 Feb. 2.	The Hon'ble Justice Sir Asutosh Mukhopadhyaya, Kt., C.S.I., M.A., D.L., D.Sc., F.R.A.S., F.R.S.E.
1910 Feb. 2.	I. H. Burkill, Esq., M.A., F.L.S.
1910 Feb. 2.	Mahamahopadhyaya Haraprasad Shastri, C.I.E., M.A.
1910 Feb. 2.	Sir Thomas H. Holland, K.C.S.I., K.C.I.E., D.Sc., LL.D., F.R.S.

Date of Election.	
1910 Feb. 2.	T. H. D. La Touche, Esq., B.A., F.G.S.
1910 Feb. 2.	Lieut.-Col. D. C. Phillott, Ph.D., Indian Army (Retired).
1910 Feb. 2.	Sir Prafulla Chandra Ray, Kt., D.Sc.
1910 Feb. 2.	Lieut.-Col. Sir Leonard Rogers, Kt., C.I.E., M.D., B.S., F.R.C.P., F.R.C.S., F.R.S., I.M.S.
1910 Feb. 2.	Sir E. D. Ross, Kt., C.I.E., Ph.D.
1910 Feb. 2.	M. W. Travers, Esq., D.Sc., F.R.S.
1911 Feb. 1.	Sir H. H. Hayden, Kt., C.S.I., C.I.E., D.Sc., B.A., B.E., B.A.I., F.G.S., F.R.S.
1912 Feb. 7.	H. Beveridge, Esq., I.C.S. (Retired).
1912 Feb. 7.	Sir J. C. Bose, Kt., C.S.I., C.I.E., M.A., D.Sc.
1912 Feb. 7.	P. J. Brühl, Esq., Ph.D., F.C.S.
1912 Feb. 7.	Capt. S. R. Christophers, I.M.S.
1912 Feb. 7.	Charles Stewart Middlemiss, Esq., B.A., F.G.S.
1912 Feb. 5.	Lieut.-Col. A. T. Gage, I.M.S.
1913 Feb. 5.	E. Vredenburg, Esq., B.I., B.Sc., A.R.S.M., A.R.C.S., F.G.S.
1913 Feb. 5.	J. Ph. Vogel, Esq., Ph.D., Litt.D.
1913 Feb. 5.	Dr. S. W. Kemp, B.A.
1915 Feb. 3.	Major E. D. W. Greig, C.I.E., M.B., I.M.S.
1915 Feb. 3.	G. H. Tipper, Esq., M.A., F.G.S.
1915 Feb. 3.	D. B. Spooner, Esq., Ph.D.
1915 Feb. 3.	H. H. Haines, Esq., F.C.H., F.L.S.
1916 Feb. 2.	Lieut.-Col. C. Donovan, M.D., I.M.S.
1916 Feb. 2.	R. Burn, Esq., C.I.E., I.C.S.
1916 Feb. 2.	L. L. Fermor, Esq., A.R.S.M., D.Sc., F.G.S.
1917 Feb. 7.	G. C. Simpson, Esq., D.Sc., F.R.S.
1917 Feb. 7.	F. H. Gravely, Esq., D.Sc.
1918 Feb. 6.	J. L. Simonsen, Esq., Ph.D.
1918 Feb. 6.	Lieut.-Col. D. McCay, M.D., I.M.S.
1918 Feb. 6.	Abdullah Al-Mámun Suhrawardy, Esq., M.A., Ph.D.
1919 Feb. 5.	J. Coggin Brown, Esq., O.B.E., M.I.M.E., F.G.S.
1919 Feb. 5.	W. A. K. Christie, Esq., B.Sc., Ph.D.
1919 Feb. 5.	D. R. Bhandarkar, Esq., M.A.
1919 Feb. 5.	Major R. B. Seymour Sewell, I.M.S.
1921 Feb. 2.	Lieut.-Col. F. Wall, C.M.G., I.M.S.
1921 Feb. 2.	U. N. Brahmachari, Esq., M.A., Ph.D., M.D.
1921 Feb. 2.	B. L. Chaudhuri, Esq., B.A., D.Sc., F.L.S., F.R.S.E.
1922 Feb. 1.	E. H. Pascoe, Esq., M.A., D.Sc., F.G.S.
1922 Feb. 1.	Ramaprasad Chanda, Esq., B.A.

## ASSOCIATE MEMBERS.

Date of Election.	
1875 Dec. 1.	Revd. J. D. Bate. 15, <i>St. John's Church Road, Folkestone, Kent, England.</i>
1885 Dec. 2.	Dr. A. Führer, Prof. of Sanskrit. 5, <i>Dorenbachstrasse, Binningen, Basel, Switzerland.</i>
1899 Nov. 1.	Revd. E. Francotte, S.J. 30, <i>Park Street, Calcutta.</i>
1902 June 4.	Revd. A. H. Francke. <i>Europe.</i>
1908 July 1.	Rai Sahib Dinesh Chandra Sen, B.A. 19, <i>Visvakos Lane, Calcutta.</i>
1910 Sept. 7.	Shams-ul-Ulama Ahmad Abdul Aziz (Nayati), Khan Bahadur, Nawab Aziz Jung Bahadur. <i>Aziz Villa, Aziz Bagh, Sultan Poora, Hyderabad, Deccan.</i>
1910 Sept. 7.	L. K. Anantha Krishna Iyer, Rao Bahadur, B.A., L.T., F.R.A.I., University Lecturer in Anthropology, Calcutta University. <i>Calcutta.</i>
1910 Dec. 7.	Revd. Fr H. Hosten, S.J. <i>St. Joseph's College, Darjeeling.</i>
1915 Mar. 3.	E. Brunetti, Esq. 27, <i>Chowringhee Road, Calcutta.</i>
1915 Dec. 1.	Pandit Jainacharya Vijayadharma Surisvaraji, <i>Yasovijaya Granthamal Office, Benares City.</i>
1919 Sept. 3.	H. Bruce Hannah, Esq. <i>Bengal Club, Calcutta.</i>
1921 Jan. 5.	Professor Shahay Ram Bose, M.D., Ph.D., F.L.S., Prof. of Botany, Carmichael Medical College. <i>Belgachia, Calcutta.</i>
1922 Feb. 1.	Pierre Johannes, B.Litt. (Oxon), Prof. of Philosophy, St. Xavier's College. <i>Calcutta.</i>
1922 Feb. 1.	Vedantabisharad Anantakrishna Sastri. 57/1, <i>Sreegopal Mallick Lane, Calcutta.</i>

LIST OF MEMBERS WHO HAVE BEEN ABSENT  
FROM INDIA THREE YEARS AND  
UPWARDS.\*

\* *Rule 40.*—After the lapse of three years from the date of a member leaving India, if no intimation of his wishes shall, in the interval, have been received by the Society, his name shall be removed from the List of Members.

The following members will be removed from the next Member List of the Society under the operation of the above rule :—

Major W. L. Campbell I.A.

George Clarke Simpson, D.Sc., F.A.S.B.

Harold Walker, A.R.C.S., F.G.S., A.M.Inst.M.  
Harry George Waters, F.R.I.P.H.  
Gerald Mackworth Young, B.A., I.C.S.

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LOSS OF MEMBERS DURING 1922.

BY RETIREMENT.

*Ordinary Members.*

Raja Damodar Das Bahadur.  
Major A. Tancock.  
Dr. E. H. Hankin.  
Babu Netai Churn Law.  
Prof. Jadu Nath Sarkar.

BY DEATH.

*Ordinary Members.*

Mr. M. L. Dames.  
Babu Khagendra Bhusan Roy.

*Honorary Fellows.*

Sir Patrick Manson, G.C.M.G., M.D., LL.D., F.R.C.P.  
Mr. C. H. Tawney, M.A., C.I.E.

RULE 38.

None.

RULE 40.

Lt.-Col. C. Donovan, M.D., I.M.S., F.A.S.B.  
Geoffery D. Hope, Esq., B.Sc., Ph.D.  
Rev. R. P. Newton, M.A.  
Pestonji Sorabji Patuck, Esq., I.C.S.  
Dr. C. P. Segard.  
Herbert Neil Randle, Esq., B.A.

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ELLIOTT GOLD MEDAL AND CASH

RECIPIENTS.

1893 Chandra Kanta Basu.  
1895 Yati Bhusana Bhaduri, M.A.

- 1896 Jnan Saran Chakravarti, M.A.  
 1897 Sarasi Lal Sarkar, M.A.  
 1901 Sarasi Lal Sarkar, M.A.  
 1904 { Sarasi Lal Sarkar, M.A.  
       { Surendra Nath Maitra, M.A.  
 1907 Akshoyakumar Mazumdar.  
 1911 { Jitendra Nath Rakshit.  
       { Jatindra Mohan Datta.  
       { Rasik Lal Datta.  
 1913 { Saradakanta Ganguly.  
       { Nagendra Chandra Nag.  
       { Nilratan Dhar.  
 1918 Bibhutibhushan Dutta, M.Sc.  
 1919 Dr. Jnanendra Chandra Ghosh.  
 1922 Abani Bhusan Datta, M.A., Ph.D.

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## BARCLAY MEMORIAL MEDAL.

### RECIPIENTS.

- 1901 E. Ernest Green, Esq.  
 1903 Major Ronald Ross, F.R.C.S., C.B., C.I.E., F.R.S.,  
       I.M.S. (Retired).  
 1905 Lieut.-Col. D. D. Cunningham, F.R.S., C.I.E.,  
       I.M.S. (Retired).  
 1907 Lieut.-Col. Alfred William Alcock, M.B., LL.D.,  
       C.I.E., F.R.S.  
 1909 Lieut.-Col. David Prain, M.A., M.B., LL.D., F.R.S.,  
       I.M.S. (Retired).  
 1911 Dr. Karl Diener.  
 1913 Major William Glen Liston, M.D., C.I.E., I.M.S.  
 1915 J. S. Gamble, Esq., C.I.E., M.A., F.R.S.  
 1917 Lieut.-Col. Henry Haversham Godwin-Austen,  
       F.R.S., F.Z.S., F.R.G.S.  
 1919 N. Annandale, Esq., D.Sc., C.M.Z.S., F.L.S.,  
       F.A.S.B.  
 1921 Lieut.-Col. Sir Leonard Rogers, F.R.S., C.I.E.,  
       F.R.C.S., M.D., B.Sc., F.R.C.P., I.M.S. (Retired).

# Proceedings of the Ordinary Monthly General Meetings, 1922.

JANUARY, 1922.

There was no Monthly General Meeting in January, 1922.

FEBRUARY, 1922.

The Monthly General Meeting of the Society of the month was held on Wednesday, the 1st, at 9-15 P.M.

The Hon'ble Justice Sir Asutosh Mookerjee, Kt., C.S.I., D.L., D.Sc., F.R.S.E., F.R.A.S., F.A.S.B., President, in the chair.

PRESENT.

## Members :

Abdul Latif, Syed, Khan Bahadur.  
Abdul Wali, Khan Sahib.  
Bal, Babu S. N.  
Banerji, Babu P. N.  
Banerji, Babu Pramatha Nath.  
Belvalker, Mr. S. K.  
Brahmachari, Dr. Upendranath.  
Brühl, Dr. P. J.  
Chatterji, Babu Nirmal Chandra.  
Christie, Dr. W. A. K.  
Dikshit, Mr. K. N.  
Francotte, Rev. E.  
Hannah, Mr. H. Bruce.

Hosten, Rev. Fr. H.  
Jain, Babu Chhotelal.  
Kar, Babu Satish Chandra.  
Knowles, Major R.  
Majumdar, Babu Ramesh Chandra.  
Manen, Mr. J. van.  
Mitra, Babu S. K.  
Mookerjee, Babu Ramaprasad.  
Moreno, Mr. H. W. B.  
Roychowdhuri, Babu Hem Chandra.  
Seth, Mr. M. J.

## Visitors :

Boyd, Major T. C.  
And others.

Napier, Dr.

The following gentlemen were balloted for and elected as Ordinary Members :—

(1) *Lt.-Col. J. W. D. Megaw, I.M.S.*, Director, Calcutta School of Tropical Medicine, 15, Kyd Street: proposed by Major R. Knowles, I.M.S., seconded by Mr. A. H. Harley; (2) *Vidhushekhara Bhattacharya, Esq.*, Professor, Visvabharti, Santiniketan (Birbhum): proposed by Mr. Narendra Nath Law, seconded by Mr. Satya Churn Law; (3) *Dr. E. Muir, M.D., F.R.C.S. (Edin.)*, Calcutta School of Tropical Medicine (Leprosy Research Worker): proposed by Major R. Knowles, I.M.S., seconded by Mr. A. H. Harley; (4) *C. V. Raman, Esq., M.A., D.Sc.*, Palit Professor of Physics, Calcutta University, 210, Bow Bazar Street: proposed by the Hon'ble Justice Sir Asutosh Mukhopadhyaya, Kt., seconded by Dr. D. R. Bhandarkar;

(5) *Major A. D. Stewart, I.M.S.*, Director, Public Health Laboratories, Calcutta School of Tropical Medicine and Hygiene: proposed by Major Knowles, I.M.S., seconded by Mr A. H. Harley; (6) *Kumar Gangananda Sinha, M.A.*, Landholder (Zemindar) 7, Dedarbakhsh Lane (off Wellesley Square), Calcutta: proposed by Dr. D. R. Bhandarkar, seconded by Babu Hem Chandra Ray Chaudhury, M.A., Ph.D.; (7) *Major R. N Chopra, I.M.S.*, Professor of Pharmacology, Calcutta School of Tropical Medicine: proposed by Major R. Knowles, seconded by Mr. A. H. Harley.

The following gentlemen were proposed on behalf of the Council as Associate Members and duly elected :—

Fr. P. Johannes, S.J., B.Litt.

Vedantabisharad Anantakrishna Sastri.

The President drew attention to the following exhibits :—

1. Exhibits by Medical Section.
2. An Albinoid Red-whiskered Bulbul. (Painted from life.) S. C. Law.
3. Palm-leaf Manuscripts of two important Sinhalese poems. Bimala Charan Law.
4. Armenian Manuscript, books and painting. Mr. J. Seth.
5. Seven Manuscripts. Dr. A. Suhrawardy.
6. Three Manuscripts. S. Khuda Buksh
7. A Manuscript. Messrs. A. G. Khan and Sons.
8. Exhibits by P. C. Nahar.
9. St. Thomas and S. Thome, Mylapore, Madras. Architectural Remains. Rev. Fr. H. Hosten, S.J.
10. Exhibits by the Geological Survey of India.
11. List of Antiquities exhibited by the Archæological Section, Indian Museum.



### MARCH, 1922.

The Monthly General Meeting of the Society of the month was held on Wednesday, the 1st, at 9-15 P.M.

DR. D. R. BHANDARKAR, M.A., PH.D., in the chair.

### PRESENT.

#### Members :

Abdul Wali, Khan Sahib.  
Agharkar, Dr. S. P.  
Bal, Prof. S. N.  
Brahmachari, Dr. Upendranath.  
Chapman, Mr. J. A.  
Chatterjee, Prof. Nirmal Chandra.  
Christie, Dr. W. A. K.

Ghatak, Prof. Jyotish Chandra.  
Ghosh, Mr. T. P.  
Jain, Babu Chhotelal.  
Manen, Mr. J. van.  
Ray, Babu Hemchandra.  
Roychowdhuri, Mr. H. C.  
Sinha, Mr. J.

*Visitors :*

Bhattacharyya, Prof. N. C.

Leward, Mr. A. S.

The minutes of the last General Meeting and the Annual Meeting were read and confirmed.

Forty-one presentations were announced.

The General Secretary reported that Sir Edward Gait, Mr. V. H. Jackson, Lala Sita Ram, Sir J. G. Cumming and Lieut. Col. J. O'Kinealy, I.M.S. had expressed a desire to withdraw from the Society.

The Chairman announced that the following member being largely in arrears with his subscriptions has been posted as a defaulter since the last meeting and that his name had been removed from the member list.

Babu Kashi Nath Das. . . . . Rs. 59.

The Rev. Fr. H. Hosten, S.J., exhibited some photographs illustrating "Some pre-Portuguese Christian relics from S. Thome, Mylapore."

The General Secretary read the names of the following gentlemen who had been appointed to serve on the various Committees during 1922.

*Finance Committee.*

President.

Treasurer.

General Secretary.

L. L. Fermor, Esq., O.B.E.

P. C. Mahalanobis, Esq., B.Sc.

Kumar Sarat Kumar Roy, M.A.

*Library Committee.*

President.

Treasurer.

General Secretary.

Hon. Librarian.

Anthropological Secretary.

Biological Secretary.

Physical Science Secretary.

The two Philological Secretaries.

Medical Secretary.

Johan van Manen, Esq.

W. C. Wordsworth, Esq.

J. A. Chapman, Esq.

M.M. Hara Prasad Shastri.

S. Khuda Bukhsh, Esq.

*Philological Committee.*

President.  
 Treasurer.  
 General Secretary.  
 Mahamahopadhyaya Haraprasad Shastri.  
 Babu Nilmani Chakravarti.  
 Aga Muhamad Kazim Shirazi.  
 W. C. Wordsworth, Esq.  
 Rama Prasad Chanda, Esq.  
 Philological and Joint Philological Secretaries  
 Dr. Suhrawardy.

*Hon. Numismatist.*

W. E. M. Campbell, Esq.

*Hon. Joint Secretaries Science Congress.*

Dr. J. L. Simonsen.  
 Prof. C. V. Raman.

*Building Committee.*

President.  
 Treasurer.  
 General Secretary.  
 Sir R. N. Mukerjee, K.C.I.E.  
 S. W. Kemp, Esq., B.A.  
 H. A. Crouch, Esq.  
 W. K. Dods, Esq.  
 M.M. Hara Prasad Shastri.

*Publication Committee.*

President.  
 Treasurer.  
 General Secretary.  
 Biological Secretary.  
 Physical Science Secretary.  
 Anthropological Secretary.  
 Medical Secretary.  
 Hon. Librarian.  
 The two Philological Secretaries.

*MSS. Purchase Committee.*

The Hon. Justice Sir Asutosh Mukhopadhyaya, Kt.  
 A. Suhrawardy, Esq., M.A.  
 A. H. Harley, Esq., M.A.  
 S. Khuda Bukhsh, Esq., M.A.

The following papers were put down to be read :—

1. *Was State-Socialism known in Ancient India? A Study in Kautilya's Arthashastra.*—By HEM CHANDRA ROY.

2. *The modification of the Swim-bladder in Hill-stream Fishes.*—By SUNDER LAL HORA.

3. *Some observations on the Oral Apparatus of the Tadpole of Megalophrys parva, Boulenger.*—By SUNDER LAL HORA.

4. *The Homology of the Weberian Ossicles.*—By SUNDER LAL HORA.

5. *Isopoda of the Family Bopyridae parasitic on the Indian Decapoda Natantia.*—By B. CHOPRA.

6. *Theory of generalised Quanta.*—By S. C. KAR.

7. *Dates of the votive Inscriptions on the Stupas at Sānchī.*—By R. C. MAJUMDAR.

8. *The Origin of the Sena Kings.*—By R. C. MAJUMDAR.

9. *The Identification of Suktimān Mountain.*—By R. C. MAJUMDAR.

Nos. 7, 8 and 9 were ordered to be read at the next meeting.

The President announced that the next meeting of the Medical Section would be held on Wednesday, the 8th March, 1922.

#### APRIL, 1922.

The Monthly General Meeting of the Society of the month was held on Wednesday, the 5th, at 9-15 P.M.

THE HON'BLE JUSTICE SIR ASUTOSH MOOKERJEE, KT., C.S.I., D.L., D.Sc., F.R.S.E., F.A.S.B., President, in the chair.

#### PRESENT.

##### Members :

Banerjee, Babu Pramathanath.  
Brahmachari, Dr. Upendranath.  
Brühl, Dr. P. J.  
Chapman, Mr. J. A.  
Chatterjee, Prof. N. C.  
Ghatak, Prof. Jyotish Chandra.  
Hannah, Mr. H. Bruce.  
Harrison, Dr. E. P.

Jain, Babu Chhotelal.  
Kar, Prof. S. C.  
Kemp, Dr. S. N.  
Manen, Mr. J. van.  
Raman, Prof. C. V.  
Ray, Mr. H. C.  
Roychowdhuri, Mr. H. C.  
And others.

##### Visitors :

Chaudhuri, Babu Saroda Charan.  
Dutta, Babu Upendranath.  
Fülep, Mr. E. G.

Harrison, Mrs. E. P.  
Kantmann, Mr. F.  
And others.

The minutes of the last meeting were read and confirmed.

Forty-seven presentations were announced.

The General Secretary reported with deep regret the death of Mr. J. H. Elliott, Assistant Secretary.

The following gentlemen were balloted for and elected as Ordinary Members :—

(1) *Sarat Chandra Goswami, Esq.*, Superintendent, Normal School, Jorhat, Assam : proposed by Sir Asutosh Mookerjee, seconded by Prof. D. R. Bhandarkar ; (2) *Jogesh Chandra Bose, Esq.*, Landholder, Contai, Midnapur District : proposed by Dr. A. Suhrawardy, seconded by Sir Asutosh Mookerjee ; (3) *A. F. M. Abdul Ali, Esq., M.A.*, Keeper of the Records and Assistant Secretary to the Government of India, 3, Turner Street, Calcutta : proposed by Dr. A. Suhrawardy, seconded by Sir Asutosh Mookerjee ; (4) *Rakhahari Chatterjee, Esq., B.A.* Student, Calcutta University, 7 Lakshman Das Lane, Howrah : proposed by Mr. Nilmani Chakravarti, seconded by Mr. N. G. Majumdar ; (5) *Sosadhar Banerjee Esq., B.A.*, Head Master, H.E. School, Gopalganga, Bihar : proposed by M.M. Haraprasad Shastri, seconded by Dr. R. C. Majumdar ; (6) *A. B. Dhruva, Esq.*, Principal, C.H.C., Benares University, Benares : proposed by Dr. S. K. Belvalkar, seconded by Dr. D. R. Bhandarkar ; (7) *E. G. Fülep, Esq.*, Merchant, Proprietor, E. G. Fülep & Co., Calcutta, Bombay and Hamburg, No. 5, Mission Row, Calcutta : proposed by Mr. J. A. Chapman, seconded by Dr. W. A. K. Christie ; (8) *Bhagavad Dutta, Esq.*, Prof. and Supdt., Research Dept., Dayanand Anglo-Vedic College, Lahore : proposed by Sir Asutosh Mookerjee, seconded by Dr. D. R. Bhandarkar.

The following papers were read :—

1. *Resume of Recent Progress in our Knowledge of the Indian Wasps and Bees.*—By CEDRIC DOVER.

2. *Pearl Formation in the Indian Pearl Oyster.*—By JAMES HORNELL.

3. *An automatic "make and break" key for actuating the heating and high potential circuits of a Coolidge X-Ray tube.*—By E. P. HARRISON and N. N. SEN.

4. *On the Theory of Generalised Quanta and the Relativistic Newtonian Motion.*—By S. C. KAR.

5. *Preparation of ethyl antimonyl Tartrate, Sodium antimonyl malate.*—By U. N. BRAHMACHARI.

6. *On the Rationalisation of Algebraic Equations.*—By N. CHATTERJEE.

The following papers postponed from the last meeting were also read :—

1. *Dates of the Votive Inscriptions in the Stupas at Sānchi*  
—By R. C. MAJUMDAR.
2. *The Origin of the Sena Kings.*—By R. C. MAJUMDAR.
3. *The Identification of Suktimān Mountain*—By R. C. MAJUMDAR.

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MAY, 1922.

The Monthly General Meeting of the Society of the month was held on Wednesday, the 3rd, at 9-15 P M.

THE HON'BLE JUSTICE SIR ASUTOSH MUKERJEE, KT., O.S.I., D.L., D.Sc., F.R.S.E., F.A.S.B., President, in the chair.

PRESENT.

Members :

Annandale, Dr. N.  
Brown Mr. C. J.  
Dunn, Dr. T. O. D.

Kemp, Dr. S. W.  
Knowles, Major R.  
Pilgrim, Dr. E. G.

The minutes of the last meeting were read and confirmed.

Fifteen presentations were announced.

The General Secretary announced with regret the death of Mr M. L. Pames, London, an ordinary member of the Society.

The General Secretary reported that the following member had expressed a desire to withdraw from the Society.

Raja Damodar Das Barman and Major A. Tancock.

The following gentleman was balloted for and elected as an ordinary member :—

*Reginald C. A. Schomberg, Lt.-Col., 2nd Seaforth Highlanders, Meerut* : proposed by Dr. S. W. Kemp, seconded by Mr. A. H. Harley.

The following papers were read :—

*"Lakhimpuri : A Dialect of Modern Awadhi."*—By BABU-RAM SAKSENA.

*"The development of the Ovary of Culex."*—By VISHWA NATH.

Dr. N. Annandale exhibited a second collection of Weighing beams from the Southern Shan States.

The President announced that the next meeting of the Medical Section would be held on the 10th May.

JUNE, 1922.

The Monthly General Meeting of the Society of the month was held on Wednesday, the 7th, at 6-15 P.M.

THE HON'BLE JUSTICE SIR ASUTOSH MUKERJEE, K.T., C.S.I., D.L., D.Sc., F.R.S.E., F.A.S.B., President, in the chair.

*Members :*

## PRESENT.

Abdul Wali Khan Sahib.	Jain, Babu Chhotelal.
Annandale, Dr. N.	Kemp, Dr. S. W.
Brahmachari, Dr. U. N.	Majumdar, Mr. K. N.
Chakladar, Mr. H. C.	Manen, Mr. J. van.
Chanda, Babu Ramaprasad.	Mehta, Mr. R. D.
Chapman, Mr. J. A.	Ray, Babu Hem Chandra.
Ghatak, Babu Jyotish Chandra.	Sarbadhikari, Dr. Devaprasad.
Hannah, Mr. H. Bruce.	

The minutes of the last meeting were read and confirmed.

Thirteen presentations were announced.

The General Secretary reported with deep regret the death in London on 9th April of Sir Patrick Manson, G.C.M.G., M.D., LL.D., F.R.C.P., an Honorary Fellow of the Society.

The following gentleman was balloted for and elected as an ordinary member :—

*Dr. Sivapada Bhattacharyya, M.D.*, School of Tropical Medicine, Calcutta: proposed by Sir Asutosh Mookerjee, seconded by Dr. D. R. Bhandarkar.

The following gentlemen were proposed on behalf of the Council as Honorary Fellows :—

*William Henry Perkin.*

Professor W. H. Perkin, Ph.D., Sc.D., LL.D., Waynflete Professor of Chemistry in the University of Oxford, is one of most eminent of living organic chemists. His researches have been mainly on (a) the synthesis of polymethylene derivatives, (b) the constitution of camphor, (c) the synthesis of the terpenes, (d) the constitution of cryptopine and protopine, (e) the constitution of harmine and harmaline, and the results of these researches have been published in a large series of papers, chiefly in the *Transactions of the Chemical Society*. In recognition of the value of his contributions to Chemical Science, the Royal Society awarded him the Davy Medal and the Chemical Society of London the Longstaffe Medal. Prof. Perkin is a Fellow of the Royal Societies of London and Edinburgh, a corresponding member of the Academies of Science of Göttingen and Munich, a Foreign Associate of the French Academy of Science, and past President of the Chemical Society of London and of Section B. of the British Association.

*Leonard Rogers.*

The name of Lt.-Col. Sir Leonard Rogers, Kt., C.I.E., F.R.S., M.D., B.Sc., F.R.C.P., F.R.C.S., F.A.S.B., I.M.S., formerly Professor of Pathology, Medical College, Calcutta, now Consultant Physician, School of Tropical Medicine, London, is familiar to all as that of one of the most famous authorities on tropical diseases such as Kala-azar, Leprosy and Cholera, and the moving spirit in the foundation of the lately completed School of Tropical Medicine in Calcutta. His most important published works are his books on "Fevers in the Tropics," "Cholera and its Treatment," and "Bowel Diseases in the Tropics," but he has also contributed a large number of papers on medical subjects to medical and research journals. He was awarded the Fothergillian Gold Medal and the Mary Kingsley Medal for his researches in Tropical Medicine and is a Fellow of the Royal Society of London. He is also an Honorary Member of the Cambridge Philosophical Society, of the Manila Medical Society and the American Climatological Association. He has held the office of President of this Society and of the Indian Science Congress and is now President of the Tropical Medical Section, of the Royal Society of Medicine, London.

*Thomas Henry Holland.*

The work of Sir Thomas Holland, K.C.S.I., K.C.I.E., D.Sc. LL.D., F.R.S., F.A.S.B., etc., is so well known in India that the briefest summary will be sufficient. He joined the Geological Survey of India in 1890, and became Director in 1903 returning in 1909. He was President of the Society in 1909, and for many years previously had taken an active interest in the work of the Council having been for a time its Honorary Secretary. He was Chairman of the Trustees of the Indian Museum from 1905-1909, and President of the Mining and Geological Institute of India in 1906-07. He was appointed Professor of Geology in Manchester University in 1909, but came out to India again as President of the Industrial Commission in 1916, and remained as Chairman of the Munitions Board and subsequently as member of the Governor-General's Council until 1921. Quite recently he has been appointed to the high office of Rector of the Imperial College of Science and Technology. As a geologist he is best known for his description of the charnockite series of rocks and as an anthropologist for his paper on contact metamorphism in the races of Coorg.

Sir T. Holland has taken the fullest possible opportunity of the high official positions he has occupied in furthering the interests of science.

The following papers were read :—

*A Contribution to the Bibliography of Tibet.*—By JOHAN VAN MANEN.

*Notes on Some Bas-reliefs of Bharhut.*—By RAMAPRASAD CHANDA.

The President announced that the next meeting of the Medical Section would be held on Wednesday, the 14th June, 1922, at 6-15 P.M.

### JULY, 1922.

The Monthly General Meeting of the Society of the month was held on Wednesday, the 5th, at 6-15 P.M.

THE HON'BLE JUSTICE SIR ASUTOSH MUKHOPADHYAYA, KT, C.S.I., D.L., D.Sc., F.R.S.E., F.A.S.B., President, in the chair.

#### PRESENT.

#### Members :

Abdul Wali, Khan Sahib.  
Annandale, Dr. N.  
Brühl, Dr. P. J.  
Chakladar, Mr. H. C.  
Chanda, Mr. R. P.  
Chapman, Mr. J. A.  
Das Gupta, Hem Chandra.  
Deb, Kumar Harit Krishna.  
Fermor, Dr. L. L.

Ghatak, Babu Jyotish Chandra.  
Hannah, Mr. H. Bruce.  
Harrison, Dr. E. P.  
Kemp, Dr. S. W.  
Manen, Mr. J. van.  
Mehta, Mr. R. D.  
Moreno, Mr. H. W. B.  
And others.

#### Visitor :

Mr. S. C. Sarne.

The minutes of the last meeting were read and confirmed.

Nineteen presentations were announced.

The General Secretary announced with regret the death of Babu Khagendra Bhusan Roy, an ordinary member of the Society.

The General Secretary reported that Dr. E. H. Hankin and Mr. Netai Churn Law had expressed a desire to withdraw from the Society.

The following gentlemen were balloted for and elected as ordinary members:—

*Udai Narain Gaur*, Zemindar, Village Pidwhal, P.O. Ghosi, District Azamgarh, U.P.: proposed by Dr. S. W. Kemp, seconded by Dr. D. R. Bhandarkar: *Radhakumad Mukerji* Head of the Department of Indian History, University of Lucknow: proposed by Dr. D. R. Bhandarkar, seconded by Dr. S. W. Kemp.

The following gentlemen were balloted for and elected as Honorary Fellows :—

Prof. W. H. Perkin, Ph.D., Sc.D., LL.D., F.R.S.; Sir Thomas Holland, K.C.S.I., K.C.I.E., D.Sc., F.R.S.; Lt.-Col. Sir Leonard Rogers, Kt., C.I.E., M.D., B.Sc., F.R.C.P., F.R.C.S., F.A.S., I.M.S.

The following papers were read :—

1. *On the Radioactivity of Some Indian Minerals.*—By N. A. YAJNIK and SARAL JANG KOHLI.

2. *A Note on the Jāngala Desa.*—By KUMAR GANGA-NANDA SINHA.

3. *Precession of Equinoxes in Indian Astronomy.*—By JYOTISH CHANDRA GHATAK.

The President announced that the next meeting of the Medical Section would be held on the 12th July, 1922.

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AUGUST, 1922.

The Monthly General Meeting of the Society of the month was held on Wednesday, the 2nd, at 6-15 P.M.

THE HON'BLE JUSTICE SIR ASUTOSH MOOKERJEE, Kt., C.S.I., D.L., D.Sc., F.R.S.E., F.A.S.B., President, in the chair.

*Members :*

Abdul Wali, Khan Sahib.  
Agharker, Dr. S. P.  
Annandale, Dr. N.  
Ayer, Mr. L. K. Anantakrishna.  
Chakladar, Prof. H. C.  
Das Gupta, Prof. H. C.  
Dikshit, Mr. K. N.  
Gurner, Mr. C. W.  
Harrison, Dr. E. P.  
Jain, Babu Chhotelal.  
Kesteven, Hon'ble Mr. C.

PRESENT.

Manen, Mr. J. van.  
Matthai, Mr. G.  
Moreno, Mr. H. W. B.  
Ray, Kumar Sarat Kumar.  
Ray Babu Sasadhara.  
Roychowdhuri, Babu Hem Chandra.  
Singha, Babu Gangananda.  
Vidyabhusan, Babu Amulya Chandra.

*Visitors :*

Mr. R. Kimura.  
And others.

Mr. D. R. Mehta.

The minutes of the last meeting were read and confirmed.

Nineteen presentations were announced.

The President announced that Dr. S. W. Kemp, Offg. Honorary Secretary had left Calcutta on tour and that Dr. E. P. Harrison would officiate for him during the month of August.

The General Secretary reported that Prof. Jadunath Sircar had expressed a desire to withdraw from the Society.

The following gentleman was balloted for and elected as an ordinary member :—

1. *Bhagwan Das Batta*, Consulting and Analytical Chemist, Munshian Street, Nabha State : proposed by Dr. S. W. Kemp, seconded by Mr. A. H. Harley.

The General Secretary read the following address presented by the Society's delegates to the Académie Royale de Belgique on the first day of their 150th Anniversary Celebrations and a report of the proceedings of the celebrations by Dr. E. H. Pascoe :—

As the representatives of the Asiatic Society of Bengal, we have been entrusted with the honour of conveying to the President and Members of the Académie Royale de Belgique the respectful congratulations of the senior learned Society in India.

Founded also during the latter part of the XVIIIth century, the Asiatic Society has had the benefit of the publications of the distinguished Academy, particularly those embodying the researches in Oriental languages and philosophy by Felix Neve, Mgr. Lamy and Mgr. de Harley, the geological work of Edouard Dupont on the Gondwana formations of the Congo region and of Em. Laurent and Th. Durand and others on the natural history of the tropical belt of Africa.

The Académie Royale has maintained an unbroken record of work throughout all the great political and dynastic changes which have passed over Belgium, and the Asiatic Society now joins its correspondents in all the Allied countries in expressing the hope that the Académie has at last commenced an era of long-continued tranquillity which will enable it to maintain undisturbed the distinguished position which it has attained in the world of science and letters

(Sd.) { *T. H. Holland.*  
*Leonard Rogers.*  
*E. H. Pascoe.*

The proceedings in connection with the 150th Anniversary of the Académie Royale de Belgique were spread over two days, Tuesday and Wednesday, the 23rd and 24th of May, 1922. At 2 o'clock on the 23rd there was a "seance preliminaire" at which delegates were welcomed by the President and at which addresses of congratulation were presented to the Academy. The above brief address, which had been drawn up by Sir Thomas Holland, was handed in to the President with a few explanatory words.

At 4-30 of the same day we were entertained to tea by the

Bourgmestre, Echevius el autontes communsles of the city in the Banquet Hall of the historic old Hotel de Ville.

In the evening at 8-30 we were entertained at a Raout et Concert in the Palais des Académies where a fine string band played selections from Mozart and other composers.

In the morning of the 24th the following programme of excursions had been arranged, from which I selected a visit to the Archæological Museum or Musée d' Antiquitees:—

(1) To the Royal Observatory of Mcele, under the direction of M. M. G. Lecoinge and P. Stroobant.

(2) To the Botanical Garden and Institute, under the direction of M. J. Massart.

(3) To the Musée archeologique du Cinquantenaire, under the direction of M. J. Capart.

(4) To the old Museum of Fine Arts, under the direction of M. Eru. Verlant.

After traversing a small exhibition of modern feminine apparel we passed through rooms containing tapestry, *bois sculpte*, old China glass, jewelled caskets and antique furniture.

The Museum contains an important collection of antique vases, including some fine Etruscan specimens, and the usual series of stone hatchets, hammers, arrow-heads, lance-heads, etc., terra cotta lamps, figures, dishes and cups, Gallic pottery, and bronze and iron implements such as swords, spear-heads, hatchets, helmets, shields, horse-shoes, and ornaments.

The Egyptian antiquities are under the especial care of M. Capart.

In the small nucleus of a collection of Assyrian and Babylonian remains are several interesting Sumerian seal cylinders. Many of the tablets exhibited are from Ur; some of these are pierced with small channels for a thong, and display lists of small cattle with the name of their owners. Besides these there are some metal Hittite seals, the usual Nebuchadnezzar bricks, some Warka tablets, tablets of the 1st Babylonian dynasty, tablets from Qala't Sharqat, and an interesting stone said to be a threshold-stone dedicated to the God Um-ra.... by Gimil Sin, king of Ur, between 2323 and 2316 B.C.

From 2 till 4-30 in the afternoon a "seance commemorative" was held in the Palais des Académies, at which His Majesty the King of Belgium was present. This consisted of complimentary speeches and would have been more enjoyable if the thermometer had not registered something like 95° F. At the close of the seance we were conveyed to the Royal Palace of Laebeu, where we were privileged to inspect the wonderful show of azalias and other flowers, amidst which tea was served.

The proceedings terminated with a pleasant banquet at the Hotel Astora in the evening.

(Sd.) E. H. PASCOE.

The following papers were read :—

1. *Discovery of Bengali (?) Dramas in Nepal.*—By KUMAR GANGANANDA SINHA.

2. *Father A. Monserratz, S.J., on Salsete, Charao, Divor and the Molucas (1529).*—Edited and translated by THE REV. FR. H. HOSTEN, S.J.

3. *The Mahabharata and the Besnagar Inscription of Heliodoros*—By HEM CHANDRA ROYCHOWDHURI.

4. *Vedic Aryandom.*—By HARAN CHANDRA CHAKLADAR.

5. *A Note on the Diplopterous Wasps in the Collection of the Indian Museum*—By CEDRIC DOVER and H. SRINIVASA RAO. (Communicated by the Biological Secretary.)

The President announced that the next meeting of the Medical Section would be held on Wednesday, the 9th August, 1922.

#### SEPTEMBER, 1922.

The Monthly General Meeting of the Society of the month was held on Wednesday, the 6th, at 6-15 P.M.

THE HON'BLE JUSTICE SIR ASUTOSH MOOKERJEE, Kt., C.S.I., D.L., D.Sc., F.R.S.E., F.A.S.B., President, in the chair.

#### Members :

#### PRESENT

Agharkar, Prof. S. P.  
Annandale, Dr. N.  
Brahmachari, Dr. U. N.  
Brown, Mr. J. Coggin.  
Dikshit, Mr. K. N.

Hannah, Mr. H. Bruce.  
Jain, Babu Chhotelal.  
Manen, Mr. J. van.  
Moreno Mr. H. W. B.  
Singha Ray, Mr. Lalit Mohan.

The minutes of the last meeting were read and confirmed.

Thirty-six presentations were announced.

The President announced that Mr. A. H. Harley would officiate as General Secretary in place of Dr. E. P. Harrison.

The General Secretary reported that Mr. J. C. Hyrapiet has been appointed Assistant Secretary to the Society in place of Mr. Cedric Dover, F.E.S.

The following gentlemen were balloted for and elected as ordinary members :—

*Dr. C. A. Strickland*, Professor of Medical Entomology, School of Tropical Medicine, Calcutta: proposed by Dr. N. Annandale, seconded by Major R. Knowles; *Dr. Surendra*

*Nath Das-Gupta*, Professor of Sanskrit and Philosophy, Chittagong College, Chittagong: proposed by Sir Asutosh Mookerjee, seconded by Dr. D. R. Bhandarkar.

The following papers were read:—

- 1 *An Old Gipsy-Darwish Jargon.*—By W. IVANOW.
- 2 *St. Thomas and S. Thome, Mylapore—Apparitions of St. Thomas and other Legends.*—By THE REV. FR. H. HOSTEN, S.J.
- 3 *Advances in our Knowledge of the Fauna of Fresh and Brackish Waters of India, with a Bibliography for the Years, 1912-22.*—By N. ANNANDALE. *Bibliography* by CEDRIC DOVER.
- 4 *A Note on Inscriptions on a Vase from Bimaran.*—By N. G. MAJUMDAR.

The President announced that the next meeting of the Medical Section would be held on the 13th September, 1922, at 6-15 P.M.

#### NOVEMBER, 1922.

The Monthly General Meeting of the Society of the month was held on Wednesday, the 1st, at 6-15 P.M.

THE HON'BLE JUSTICE SIR ASUTOSH MOOKERJEE, KT., C.S.I., D.L., D.Sc., F.R.S.E., F.A.S.B., President, in the chair.

#### Members :

Abdul Wali, Khan Sahib.  
Agharkar, Dr. S. P.  
Das Gupta, Prof. H. C.  
Ghose, Mr. T. P.  
Hannah, Mr. H. Bruce.  
Harley, Mr. A. H.

#### PRESENT.

Ivanow, Mr. W.  
Jain Babu Chhotelal.  
Manen, Mr. J. van.  
Mookherjee, Babu Ramaprasad.  
And others.

#### Visitors :

Mr. P. C. Bose.  
And others.

Mrs. A. H. Harley.

The minutes of the last meeting were read and confirmed.

Thirty-two presentations were announced.

The following candidates were balloted for and elected as ordinary members :—

(a) *Mr. Suresh Chandra Sarkar*, retired Deputy Magistrate and Deputy Collector, Bihar and Orissa, Barganda, Giridih

(E.I.R.): proposed by Mr. S. C. Mahalanobis, seconded by Mr. P. C. Mahalanobis; (b) *Mr. Mahommed Irfan*, Professor of Arabic and Persian, Hooghly College, Hooghly: proposed by Mr. A. H. Harley, seconded by Sir Asutosh Mukhopadhyaya; (c) *Pundit Prannath Vidyalankar*, Professor of History and Economics, B.H. University, Benares: proposed by Mr. K. N. Dikshit, seconded by Mr. Ramaprasad Chanda; (d) *Mrs. Strickland-Anderson*, Composer and Author, The Grand Hotel, Calcutta: proposed by Dr. S. W. Kemp, seconded by Mr. A. H. Harley.

The following papers were read :—

“ *Dihyah-al-Kalbi*.”—By A. H. HARLEY.

“ *The Sources of Jami's Nafahat*.”—By W. IVANOW.

The President announced with deep regret the death of Mr. C. H. Tawney, M.A., C.I.E., an Honorary Fellow of the Society.

Charles Henry Tawney, M.A., C.I.E., 1837–1922. He was educated at Rugby and at Trinity College, Cambridge; he was Bell University Scholar in 1857; Davis University Scholar in 1858; was Bracketed Senior Classics in 1860; and was elected Fellow of Trinity College in 1860. In 1864, Mr. Tawney came out to this country as Assistant Professor in the Presidency College, Calcutta; he served for many years as Professor in and Principal of the Presidency College, as Registrar of the Calcutta University, and after officiating three times as Director of Public Instruction, Bengal, retired in 1891. He subsequently became Librarian of the India Office. During his stay in India, he was elected as an Ordinary Member of this Society on the 6th September, 1865. He served on the Library Committee and on the Philological Committee for many years; he also acted as Philological Secretary, was a member of Council on many occasions and became Vice-President in 1880 and 1881. After his retirement, he was elected an Honorary Member of this Society (subsequently designated as Honorary Fellow) on the 5th June, 1895. His translations from Sanskrit are well known and include versions of the Kathasaritsagara, the Kathakosa, the Malabikagnimitra, the Uttararamacharita, the Probandhachintamani and the Satakas of Vartrihari. His special erudition in the classical literature alike of Europe and India was remarkable for its depth and wide range, and his commentary on Shakespeare's Richard III bears ample evidence of his profound knowledge of Elizabethan Scholarship. Amongst his other contributions may be mentioned his Notes on Fire Sticks and a Rare Coin of Soleytes, published in the Proceedings of this Society in 1881 and a paper on Folk Tale Parallel contributed

to the Journal of the Royal Asiatic Society of London in 1909.

The President proposed Prof. A. A. Macdonell (Oxford) as an Honorary Fellow of the Society.

Professor Arthur Anthony Macdonell, M.A., Ph.D., D.O.L., Boden Professor of Sanskrit in the University of Oxford; Stephanos Nirmalendu Ghose Lecturer on Comparative Religions, Calcutta University, 1921-1922; Keeper of the Indian Institute; Fellow of Balliol College, Oxford; Fellow of the British Academy; Honorary Member of the American Oriental Society; Campbell Memorial Gold Medallist of the Royal Asiatic Society of Bombay; Author or Editor of *Saravanukramani* of the *Rigveda* by *Katyayana* (*Anecdota Oxoniensia*); A Sanskrit Grammar; a Sanskrit-English Dictionary; *Vedic Mythology*; *History of Sanskrit Literature*; *New Sanskrit Grammar*; *The Brihaddevata* (*Harvard Oriental Series*); *Vedic Grammar*; *Vedic Index of Names and Subjects*; *Vedic Grammar for Students*; *Vedic Reader*.

The President announced that the next meeting of the Medical Section would be held on the 15th November, 1922, at 6-15 P.M.

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DECEMBER, 1922.

The Monthly General Meeting of the Society of the month was held on Wednesday, the 6th, at 6-15 P.M.

THE HON'BLE JUSTICE SIR ASUTOSH MOOKERJEE., Kt., C.S.I., D.L., D.Sc., F.R.S.E., F.A.S.B., President, in the chair.

*Members :*

PRESENT.

Abdul Wali, Khan Sahib.  
Agharkar, Dr. S. P.  
Banerjee, Babu Pramatha Nath.  
Brahmachari, Dr. U. N.  
Chanda, Mr. R. P.  
Das Gupta, Prof. H. C.  
Dikshit, Mr. K. N.  
Harley, Mr. A. H.

Jain, Babu Chhotelal.  
Kemp, Dr. S. W.  
Manen, Mr. J. van.  
Mehta, Mr. R. D.  
Moreno, Prof. H. W. B.  
Ray, Prof. H. C.  
Singha Ray, Mr. Lalit Mohan.  
And others.

*Visitors :*

Harley, Mrs. A. H.  
Sanyal, Babu Hiran Kumar.

Winternitz, Dr. N.  
And others.

The minutes of the last meeting were read and confirmed.

Thirty-seven presentations were announced

The following candidates were balloted for and elected as ordinary members :—

(a) *Sir Basil Phillot Blackett, K.C.B.*, Finance Member, Government of India, Delhi and Simla : proposed by Lieut.-Col. D. C. Phillot, seconded by Sir Asutosh Mookerjee ; (b) *Professor Dinesh Chandra Datta, M.A.*, St. Joseph's College, Calcutta : proposed by Mr. N. G. Majumdar, seconded by Dr. S. W. Kemp.

The following papers were read :—

1. "*A new Kharoshthi inscription from Jamalgarhi of the year 359.*"—By N. G. MAJUMDAR.

2. "*Notes on Kshatrapa inscriptions.*"—By N. G. MAJUMDAR.

3. "*Father Manoel du Fonseca, S.J., in Ava (Burma) (1613-1652)*"—By REV. FR. H. HOSTEN, S.J.

4. "*Umar bin abd' l-aziz, and his Musnad collected by Al-Bāghandī.*"—By A. H. HARLEY.

5. "*On the Anatomy and Bionomics of the Red Cotton Bug, *Dysdercus cingulatus*.*"—By HEM SINGH.

6. "*On the Radioactivity of Some Indian Minerals.*"—By SARAL JANG KOLIS.

7. "*Lala—A note.*"—By HEM CHANDRA ROY.

The President announced that the next meeting of the Medical Section would be held on Wednesday, the 13th December, 1922, at 6-15 P.M.

## Proceedings of the Medical Section Meetings, 1922.

Eleven meetings were held during the year and all were well attended. The admission of medical men as visitors has tended to attract new candidates for membership, whilst the Medical Section serves the valuable purpose of a meeting ground for the whole of the medical profession in Calcutta for discussion and for securing early publicity for medical discoveries. Many of the papers read were subsequently published in the *Indian Medical Gazette*, with acknowledgments.

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### JANUARY, 1922.

A meeting of the Medical Section of the Society was held on Wednesday, the 11th January, 1922.

Dr. Upendra Nath Brahmachari, Rai Bahadur, M.A., M.D., Ph.D., F.A.S.B., in the chair.

#### Members :

Agarkar, Dr. S. P.  
Atkinson, Mr. A. C.  
Bal, Dr. S. N.  
Bentley, Dr. C. A.  
Bose, Dr. S. R.  
Campos, Dr. J. J.  
Chapman, Mr. J. A.

#### PRESENT.

Conner, Lt.-Col. F. P., I.M.S.  
Dikshit, Dr. K. N.  
Ganguli, Capt. P.  
Knowles, Major R., I.M.S.  
Moitra, Dr. S. A.  
Megaw, Lt.-Col. J. W. D., I.M.S.  
Muir, Dr. E., and others.

#### Visitors : 32.

The minutes of the last meeting were read and confirmed. Major R. Knowles, I.M.S., read a paper on "The Problems of Kala-azar."

The paper was illustrated by lantern slides and covered in retrospect the history of the research work upon the transmission problem, methods of improved diagnosis and of improved modes of treatment. There was a subsequent discussion in which Dr. E. Muir and Dr. C. A. Bentley and others took part and which turned chiefly upon the question as to the extent of the prevalence of endemic kala-azar in Bengal.

## FEBRUARY, 1922.

A meeting of the Medical Section of the Society was held on Wednesday, the 8th February, 1922.

Dr. Upendranath Brahmachari, Rai Bahadur, M.A., M.D., Ph.D., F.A.S.B., in the chair.

## PRESENT.

## Members :

Acton, Major H. W., I.M.S.

Campos, Dr. J. J.

Chatterjee, Dr. K. K.

Conner, Lt.-Col. F. P., I.M.S.

Knowles, Major R., I.M.S.

## Visitors : 5.

The chairman, before opening the proceedings, referred to the great loss sustained by the cause of medical education and welfare in Bengal by the sudden death of Major-General W. H. B. Robinson, C.B., K.H.S., I.M.S., Surgeon-General to the Government of Bengal, and a resolution was moved and carried in silence "That the Medical Section of the Asiatic Society of Bengal deeply mourns the sudden and untimely death of Major-General Robinson, C.B., K.H.S., I.M.S., Surgeon-General with the Government of Bengal, and that a copy of this resolution be sent to his widow and bereaved family."

The minutes of the last meeting were confirmed and signed. Lt.-Col. F. P. Connor, D.S.O., I.M.S., then read a paper "On Malignant Growths of the Imperfectly Descended Testis."

The author gave short case reports of cases seen in Calcutta during recent years and drew attention to the terribly malignant characters of such growths. In the discussion which followed Dr. K. K. Chatterjee mentioned having seen similar cases and Major Acton drew attention to the fact that such growths of the undescended testis are usually endotheliomata and of terrible malignancy, whereas those of the fully descended testis are usually epitheliomata of far less malignancy.

Dr. Upendranath Brahmachari, Rai Bahadur, M.A., M.D., Ph.D., F.A.S.B., then read a paper "On a New Form of Cutaneous Leishmaniasis,—Dermal Leishmanoid." The patient was originally a case of kala-azar, treated with antimony and cured of all symptoms. Long after complete cure of his kala-azar, however, he developed very slowly all over the body an eruption which was clinically exactly like nodular leprosy, but which was due to infection of the cutaneous tissues with *Leishmania donovani*, as proved on microscopic examination. The patient and microscopic preparations showing the parasites were shown.

Dr. Brahmachari's case has subsequently led to wide interest and attention. A second similar case was discovered in Calcutta in March 1923; much experimental and research work has been carried out on this new type of leishmania infection, Major Knowles recovering the flagellate form of *L. donovani* in culture from the nodules and succeeding in experimentally infecting a rhesus monkey from a nodule. Three research papers published in the *Indian Medical Gazette* and in the *Indian Journal of Medical Research* in 1922 and 1923 deal with the matter.

Dr. J. J. Campos read a paper "On the Biochemical Aspects of Cholesterol and its Therapeutic Value in Infections with acid-fast bacilli and in Hemolytic Diseases."



### MARCH, 1922.

A meeting of the Medical Section of the Society was held on Wednesday, the 8th March, 1922.

Dr. Upendranath Brahmachari. Rai Bahadur, M.A., M.D., Ph.D., F.A.S.B., in the chair.

#### PRESENT.

##### Members :

Acton, Major H.W., I.M.S.  
Campos Dr. J. J.  
Chatterjee, Dr. K. K.  
Ganguli, Capt. P.

Knowles, Major R., I.M.S.  
Megaw, Lt. Col. J. W. D., I.M.S.  
Muir, Dr. E.  
Stewart, Major A. D., I.M.S.

##### Visitors : 9, including—

Cunha Braganca, Dr.  
Napier, Dr. L. E.

Shanks, Capt. G., I.M.S.

The minutes of the last meeting were confirmed and signed.

Major H. W. Acton, I.M.S., then read a paper "On the Isomeric Relationships of the Cinchona Alkaloids and their Relative Therapeutic Values."

This very important paper covered the whole ground of Major Acton's enquiry into the cinchona alkaloids during the past five years both in India under the Indian Research Fund Association and in London under the National Council for Medical Research. The work at the malaria hospital at Dagshai was first dealt with. Here, where re-infections could be excluded, almost all the relapses were found to be caused by the benign tertian parasite and not by the malignant tertian one. It was clear that whereas infections with *P. falciparum* are more or less readily amenable to quinine administration, those with *P. vivax* are not, and it is this parasite which is especially

the cause of relapsing malaria. The cinchona alkaloids can be grouped into (a) dextro- and (b) lævo-rotatory groups, and the relative efficacy of these against a pure strain of *Paramecium caudatum*, used as an experimental protozoal animal was tested under most carefully controlled conditions. Quinidine was found to be ten times as active as quinine and the dextro-rotatory alkaloids in general more active than the lævo-rotatory. All cause muscle necrosis when given intramuscularly, and especially so if an acid salt be used. The influence of the substrate is enormous, and a very slight alteration in the  $P_{H}$  of the portal blood may render these alkaloids ten times as efficacious or ten times less efficacious. The moral is that the treatment of malaria is *not* summed up in the one word "quinine"; quinidine or even cinchona febrifuge is far more efficacious and it should be so administered as to reach the portal blood stream at the moment of its most alkaline tide, whilst previous administration of alkalies may enhance its value.

Dr. K. K. Chatterji, F.R.C.S I., read a paper "On Climatic Variations in Surgical Practice." He showed that in Calcutta in the months of June to September the bacterial content of the atmosphere is at its maximum and that these were the worst months of the year for surgical work. Special precautions against sepsis should be taken in operating theatres during these months. After cyclonic weather the bacterial content fell.

Dr. U. N. Brahmachari, Rai Bahadur, M.A., M.D., Ph.D., F.A.S.B., read a paper "On the Influence of the Acidic and Basic Radicles of an Antimonyl Compound upon the Toxicity of its Antimony Content." He pointed out that of the antimonyl tartrates the toxicity of the ammonia-urea tartrate was the least, whilst the glycerides were still less toxic and non-hæmolytic. Sb in pentavalent form was far less toxic than Sb in trivalent form. Hence his new preparation, urea stibamine, seemed to be very promising in the treatment of kala-azar.

Dr. Brahmachari's new preparation has subsequently been the subject of several reports by different workers in the medical journals, some of whom report it to be far more efficacious in the treatment of kala-azar than are the antimonyl tartrates.



MAY, 1922.

A meeting of the Medical Section of the Society was held on Friday, the 5th May, 1922.

Dr. Upendranath Brahmachari, Rai Bahadur, M.A., M.D., Ph.D., F.A.S.B., in the chair.

PRESENT.

Members :

Acton, Major H. W., I.M.S.  
Bentley, Dr. C. A.  
Knowles, Major R., I.M.S.

Muir, Dr. A.  
Stewart, Major A. D., I.M.S.

Visitors : 10, including—

Iyengar, Mr. M. V. T.

Mevail, Dr. B.

The minutes of the last meeting were confirmed and signed.

Dr. C. A. Bentley, M.D., D.P.H., Director of Public Health, Bengal, read a paper on "The Economics of Bengal Malaria."

This paper was subsequently published in the *Indian Medical Gazette* for September 1922. Dr. Bentley's main contention was that the malaria problem of Bengal was dependent upon the economic status of its population. The population in general live upon the basal economic line. In some areas, especially in Western and Central Bengal economic conditions are bad, population has declined, the people live below the basal economic line, and here malaria has steadily increased and has now become a very serious problem. In Eastern Bengal on the other hand the people are relatively well off owing to jute cultivation, they live above the basal economic line, the annual flooding of large areas destroys the anopheline larvæ, and malaria has been and is declining. Bengal being deltaic in character, the one most important measure for the eradication of malaria from the province should be the introduction of controlled flooding of the country, on the lines used in Egypt. Dr. Bentley then went on to describe how, in some areas elsewhere in India, such flooding has reduced malarial prevalence. The paper was illustrated by a large number of lantern slides, and the publication of Dr. Bentley's views on the subject has led to an interesting controversy in both the medical and lay-papers and renewed interest in the problem.



JUNE, 1922.

A meeting of the Medical Section of the Society was held on Wednesday, the 14th June, 1922.

Dr. Upendranath Brahmachari, Rai Bahadur, M.A., M.D., Ph.D., F.A.S.B., in the chair.

PRESENT.

Members :

Das, Dr. C. G.  
Ganguli, Capt. P.  
Knowles, Major R., I.M.S.

Gourlay, Lt.-Col. C. A., D.S.O.,  
I.M.S.  
Muir, Dr. E.

Visitors : 21.

The minutes of the last meeting were confirmed and signed.

Dr. E. Muir, M.D., F.R.C.S. (Edin.), read a paper on "Recent Advances in our Knowledge of and Treatment of Leprosy."

Dr. Muir dwelt upon the importance of the secondary factors in leprosy. Infection almost certainly took place by inoculation through the skin or through the mucous membrane of the nose. Sepsis was an important element in increasing ulceration. Diet, exercise, general tonics and an optimistic outlook were most important factors in treatment. The paper was illustrated by a very complete collection of lantern slides illustrating all the clinical phases of leprosy.

The paper was followed by an interesting discussion in which Major Knowles drew attention to undiagnosed cases with minimal lesions. Dr. Jogesh Mukerji described the morphological changes which occur in the lepra bacilli under treatment with the ethyl ester preparations. Capt. P. Ganguli drew attention to the work of Dr. Shaw Mackenzie on the lipase mechanism in tuberculosis and its possible bearing in leprosy.

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JULY, 1922.

A meeting of the Medical Section of the Society was held on Wednesday, the 12th July, 1922.

Dr. Upendranath Brahmachari, Rai Bahadur, M.A., M.D., Ph.D., F.A.S.B., in the chair.

*Members :*

PRESENT.

Campos, Dr. J. J.  
Ganguli, Capt. P.  
Knowles, Major R., I.M.S.  
Muir, Dr. E.

Reed, Dr. A. V.  
Shorten, Major J. A., I.M.S.  
Stewart, Major A. D., I.M.S.

*Visitors :* 11, including—

Armytage, Major V. B. Green,  
I.M.S.

Napier, Dr. L. E.

The minutes of the last meeting were confirmed and signed.

Major J. A. Shorten, B.A., M.B., B.Ch., I.M.S., read a paper on "Diathermy, its History and Uses in Medicine and Surgery."

Major Shorten first dealt with the history of the introduction of diathermy. If a very high frequency alternating current of more than 10,000 per second be passed through the tissues between two electrodes placed on the skin, the tissues do not

contract, but their temperature rises and local temperatures of even 120°F. can be induced without the patient feeling any pain. Such an application results in a flow of lymph to the part and the method has wide applications. It can be used (a) As general diathermy for the whole body, administered with the patient lying upon a diathermy couch. Here cases of insomnia, arteriosclerosis, chilliness and glandular deficiency, and of neurasthenia and malnutrition are benefited. (b) Local diathermy is of great value in such conditions as intractable neuritis, sciatica, lumbago, angina pectoris, teno-synovitis of whatever causation, neuritis of whatever causation, painful hæmorrhoids, Raynaud's disease, painful stumps after amputation in which the method gave great relief during the war, stiff joints, arthritis of whatever causation and gout. Gonorrhœa was especially amenable to it, both as a local urethral application, since the gonococcus is not resistant to heat, and also gonorrhœal arthritis. (c) Surgically with the use of the diathermy surgical electrodes absolutely bloodless operations can be carried out upon such conditions as cancer of the tongue or larynx, and the operations are sterile, and in operating on malignant disease there is freedom from the danger of metastases. The paper was followed by a very complete exhibition of diathermy methods showing the different uses concerned.



# AUGUST, 1922.

A meeting of the Medical Section of the Society was held on Wednesday, the 9th August, 1922.

Dr. Upendranath Brahmachari, Rai Bahadur, M.A., M.D., Ph.D., F.A.S.B., in the chair.

## *Members :*

## PRESENT.

Acton, Major H. W., I.M.S.	Knowles, Major R., I.M.S.
Barnardo, Lt.-Col. F. A. F., C.B.E., C.I.E., I.M.S.	Muir, Dr. E.
Chatterjee, Dr. K. K.	Stewart, Major A. D., I.M.S.
Chopra, Major R. N., I.M.S.	Strickland, Dr. C.
Ganguli, Capt. P.	Suhrawardy, Dr. H., M.L.C.

## *Visitors :* 35, including—

Bishop, Dr. T. H.	Harnett, Major W. L., I.M.S.
Chatterjee, Dr. G. C., Rai Bahadur.	Leicester, Lt.-Col. J. C. H., I.M.S.
Curjel, Miss Dagmar, M.D.	Napier, Dr. L. E.

The minutes of the last meeting were confirmed and signed.


Major A. D. Stewart, D.P.H., I.M.S., Director, Public Health Laboratories, Bengal, read a paper on "Tube Wells in Bengal."

Major Stewart explained that there are really two Ganges deltas, an ancient and a more modern one super-imposed. Two methods of boring tube wells were described, the one in which the tube well itself is used for boring, the other in which an outer tube boring is first sunk, the tube well then inserted, and the outer cover removed by degrees, the space between the two being gradually filled in with rammed sand. Experiments with tube wells in Bengal has shown that often an absolutely sterile, cool and reliable supply could be obtained at a very low cost, and tube wells were coming into more and more use in Bengal. At first the water might be contaminated, and especially so if a contaminated water supply be used in the jet for loosening earth inside the bore. Even this however usually clears later. Occasionally iron salts constituted a difficulty in such supplies and might necessitate chemical treatment. As to cost it could be roughly estimated at one rupee per gallon yield per hour. In the discussion on Major Stewart's paper Dr. Bishop gave an interesting account of the use of tube wells on the E. B. Ry. during the building of the Sara Ghat Bridge, and in cholera epidemics.

Major H. W. Acton, I.M.S., then read a paper "On the Causation of the Epidemic Dropsy of Calcutta." He described the close association of the disease with the consumption of a particular grade of rice. It had been found that this rice was usually brought to the rice stores in Howrah by boat. During the monsoon season, with conditions of great humidity and high temperature, the rice became infected with certain moulds and a spore bearing aerobic bacillus. As the rice was both milled and parboiled before storing, it was unprotected, and these hydrolysing micro-organisms produced in it poisonous amines. These amines had been salted out and experimentally tested. They produce shortened, diminished and irregular systola of the heart with a rise in blood pressure and an increase in volume of the lower limbs. Symptoms similar to those of epidemic dropsy had been produced in monkeys fed on the infected rice, and experiments were in progress to try and infect healthy rice and to experimentally produce these amines and test them.

Major Acton's paper was subsequently published in the *Indian Medical Gazette*, and has led to increased interest in and investigation of the disease, the true etiology of which now appears to be established, as well as the measures needed for its prevention.

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SEPTEMBER, 1922.

A meeting of the Medical Section of the Society was held on Wednesday, the 13th September, 1922.

Dr Upendranath Brahmachari, Rai Bahadur, M.A., M D., Ph.D., F.A.S.B., in the chair.

*Members :*

PRESENT.

Acton, Major H. W., I.M.S.  
Chopra, Major R. N., I.M.S.  
Ganguli, Capt. P.

Knowles, Major R., I.M.S.  
Stewart, Major A. D., I.M.S.  
Strickland, Dr. C.

*Visitors :* 18.

The minutes of the last meeting were confirmed and signed.

Dr. Brahmachari read a paper on "Further Biochemical Researches in Kala-azar and a new Globulin Test."

He showed that in the serum from the blood of kala-azar patients the globulin-albumin ratio appears to be the reverse of that in health, and the total globulin content is increased in Kala-azar. On diluting with distilled water these globulins could be fractionally separated, one fraction coming down at a dilution of 1 in 3 to 5, another at 1 in 30 to 50, a third at 1 in 200. An application of this principle was described by which the total globulin content could be measured in special test tubes held over print by dilution methods with distilled water, and a new test for the diagnosis of kala-azar by serological methods introduced. The paper was discussed by Dr. L. E. Napier, Major Acton and Capt. P. Ganguli.

Major R. N. Chopra, I.M.S., then read a paper on "The Nature, Production and Actions of the Toxins of the Cholera Vibrio."

In this he summarised the experimental work on the subject, subsequently published in a joint paper with Majors Acton and Boyd in the *Indian Journal of Medical Research*. The cholera vibrio was a peculiar organism. When grown on media relatively free from a rich supply of amino-acids it produced but little toxin; but when grown on media rich in amino-acids, such as could be obtained by using decomposed veal and then sterilising the medium before inoculation, it yielded a rich production of poisonous amines, or pressor bases. These had been salted out from such cultures and isolated in a state of chemical purity, separated into constituent volatile and non-volatile fractions and each experimentally tested. As thus tested the non-volatile amine cause tonic spasm of the uterus and was responsible for the abortions in pregnant

women suffering from cholera; its toxicity resided in its argenine-fraction. In general the non-volatile amines caused stimulation of the heart beat, but diminution of the kidney volume, followed later by increased kidney volume, severe and irregular peristalsis of the intestine, and intertubular oedema of the kidneys as shown by microscopic sections. The symptoms of cholera had been experimentally reproduced in rabbits by injection of these amines, freed from all bacteria, and even fatal collapse might occur, whilst the typical cramps of cholera always resulted. Hitherto we have studied chiefly the morphology of bacteria; it is now time that we studied far more their biochemistry and bionomics. Thus with either a Shiga bacillus infection or with an infection with the cholera vibrio, whether the result was merely the production of the carrier state, a transient diarrhoea, or a fulminant and even fatal attack of enteritis might depend very largely upon the proteid content of the environment in the gut, and the clinical applications of such experimental findings in both prevention and treatment of these diseases were obvious.

The Secretary then read a paper, communicated by Major W. L. Harnett, I.M.S., on "A case of Traumatic Aneurism of the Spleen," the paper being illustrated by colour-plates of the organ, and microscope sections. The case was one of an adult male Italian who had been injured years before in a railway accident, and the localised aneurism appeared to have been a late sequela of the accident. He made a good recovery after splenectomy.

### OCTOBER, 1922.

A meeting of the Medical Section of the Society was held on Wednesday, the 11th October, 1922.

Dr. Upendranath Brahmachari, Rai Bahadur, M.A., M.D., Ph.D., F.A.S.B., in the chair.

#### Members :

#### PRESENT.

Acton, Major H. W., I.M.S.	Campos, Dr. J. J.
Barnardo, Lt.-Col. F. A. F., C.B.E., C.I.E., I.M.S.	Ganguli, Capt. P.
Bhattacharji, Dr. S.	Knowles, Major R., I.M.S.
	Stewart, Major A. D., I.M.S.

Visitors : 62.

The minutes of the last meeting were confirmed and signed. Lt.-Col. F. A. F. Barnardo, C.B.E., C.I.E., M.D., F.R.C.S., I.M.S., Principal, Calcutta Medical College, read a paper

on "The Management of Typhoid Cases with a Note on the Causation of Hæmorrhage in the Enteric Fevers."

Colonel Barnardo based his evidence upon a total of some 30,414 cases seen during the war in South Africa, during civil medical practice in India, and in the Great War on cases passing through Bombay. He first insisted that typhoid fever was a disease to be diagnosed by the clinician rather than by the pathologist and quoted Garrow's criteria for the diagnosis of the enteric fevers. The French Army statistics during the war showed the value of anti-enteric inoculation. Besredka had advised discontinuance of this inoculation, with the result that in the next 12 months the French Army had about 73,000 cases of enteric as against about 4,000 in the British Army in France, of approximately equal size, but protected by inoculation. He considered typhoid to be a bacillæmia, but sometimes the typhoid bacilli were eliminated and a secondary invasion of the blood stream with streptococci resulted.

Clinically with the onset of hæmorrhage went a transitory fall in blood pressure, great acceleration in the pulse rate, great increase in blood pressure and often polyuria. Here if blood cultures were taken what was found was not so frequently the *B. typhosus*, but streptococci or staphylococci. The ordinary practitioner treated typhoid along a line of expectant therapy, in other words drift, whereas it was one of the most easily controlled of diseases. A red line should be drawn across the temperature chart at 102. 5°F. and the temperature should not be allowed to exceed this, by *hot* not cold sponging, baths, etc. The mucin of the intestine being the chief defensive mechanism of the gut, judicious administration of calcium salts was useful; but they must not be pushed so far as to favour thrombosis. Iron perchloride was the sheet anchor of treatment, given in big doses. Proteids should be eliminated from the diet and for threatened heart failure intravenous strophanthin. In the last 340 cases treated at the Medical College Hospital on these lines the mortality had only been 4% and out of 180 cases with relapses, no less than 72 had given cultures of septic cocci from the blood. Typhoid was a very amenable disease to treat, if one only knew the right lines upon which to proceed.

Colonel Barnardo's paper led to a vigorous discussion. Dr. S. K. Bose considered the cocci isolated from the blood to be merely accidental, whilst he considered Colonel Barnardo's views on the action of digitalis to be not merely revolutionary, but inaccurate. Major Acton said that what was wrong with the laboratory diagnosis of the enteric fevers was not the pathologist's findings, but the clinician's interpretation of them. He wished to say something about those 17,000 cases in Mesopotamia, as he had seen some of them. Most of them were not true typhoid at all but paratyphoid A, a disease amenable

to any or no treatment. The enteric group of fevers showed marked differences, the one from the other; typhoid was a rather severe septicaemia, paratyphoid A was a milder septicaemia, paratyphoid B was an enteritis with but little septicaemic element.

To what extent were these three classed together in Colonel Barnardo's figures? Further, streptococcal infections were associated as a rule, not with the breaking down ulceration described, but with inflammatory induration. Major R. Knowles, although not a pharmacologist, was amazed to hear Colonel Barnardo claim that digitalis had no cumulative action, he had always understood that the contrary was one of the most fully established facts in pharmacology. Dr. Brahmachari considered that the value of iron perchloride as an antiseptic, whether given orally or used upon skin lesions, was far from being as established as Colonel Barnardo suggested. Colonel Barnardo replied, and an interesting meeting which began at 6.15 P.M. terminated at 8.30 P.M.

## NOVEMBER, 1922

A meeting of the Medical Section of the Society was held on Wednesday, the 15th November, 1923.

Dr. Upendranath Brahmachari, Rai Bahadur, M.A., M.D., Ph.D., F.A.S.B., in the chair.

### Members :

Acton, Major H. W., I.M.S.  
Bose, Dr. S. R.  
Chopra, Major R. N., I.M.S.  
Ganguli, Capt. P.  
Knowles, Major R., I.M.S.

### PRESENT.

Megaw, Lt.-Col. J. W. D., I.M.S.  
Muir, Dr. E.  
Raman, Prof. C. V.  
Stewart, Major A. D., I.M.S.

### Visitors : 54, including—

Napier, Dr. L. E.

Shanks, Capt. G., I.M.S.

The minutes of the last meeting were confirmed and signed.

Major H. W. Acton, I.M.S., read a paper "On the Mode of Action of Selective Drugs."

In general he showed that the action of such selective drugs, such as the cinchona alkaloids in malaria or the arsenical derivatives in syphilis, depended upon certain factors, which needed analysis. (a) Their chemical constitution; thus the dextro- and lævo-rotatory cinchona alkaloids showed quite different therapeutic properties. (b) The alkalinity or acidity

of the tissues in which they acted; thus to kill *Paramœcium caudatum* quinine in 1 in 1000 solution is effective at a  $P_H$  of 8, but at a  $P_H$  of 7 a 1 in 100 solution is needed. (c) Their diffusibility through cell membranes. Hence such factors as variations in the hydrogen ion concentration in the tissues where they acted, their optical activity, the conditions present in the substrate around them and their diffusibility, governed the mode of action of such drugs and were factors in their selective action. At present and in our present-day pharmacopœia it could be well said that cures were purely chance phenomena; we needed much more detailed investigation and biochemical knowledge. Turning to the other side of the problem, the invading parasites might die from starvation as the drug might render the tissues unpalatable to them; the drug might so retard the rate of multiplication of the parasites as to reduce them below the pathogenic threshold; and, should the site of most intensive multiplication of the parasites coincide both with that of greatest concentration of the drug and with its optimum  $P_H$  of activity, the rate of cure would be maximal. All these points may well come to dominate the pharmacology of the future.

In the discussion on Major Acton's paper Professor C. V. Raman dwelt upon the new vistas held forth by the combination of the chemist, the physiologist and the biochemist who had hitherto been strangers to one another, but were now commencing to work in team work, with results of incalculable benefit. Dr. Panchanan Neogi, Major T. C. Boyd, I.M.S., Major R. N. Chopra, I.M.S., and Major R. Knowles, I.M.S. took part, whilst Dr. Brahmachari drew attention to the problems connected with the biochemical action of the anæsthetics.



## DECEMBER, 1922.

A meeting of the Medical Section of the Society was held on Wednesday, the 13th December, 1922.

Dr. Upendranath Brahmachari, Rai Bahadur, M.A., M.D., Ph.D., F.A.S.B., in the chair.

### Members :

Acton, Major H. W., I.M.S.  
Bal, Dr. S. N.  
Bose, Dr. S. R.  
Chopra, Major R. N., I.M.S.

### PRESENT.

Chatterjee, Dr. K. K.  
Knowles, Major R., I.M.S.  
Megaw, Lt.-Col. J. W. D., I.M.S.  
Muir, Dr. E.

### Visitors : 32, including—

Neogi, Dr. P.

Thomas, Mr. R.W.

The minutes of the last meeting were confirmed and signed.

Major R. N. Chopra, I.M.S., read a joint paper by himself and Dr. Birendra Nath Ghosh on "The Future of Research into Indian Indigenous Drugs."

The writers dwelt upon the enormous field for useful investigation into Indian indigenous drugs, the necessity for correlating clinical and experimental investigations, for making suitable standardised preparations of such drugs, and on the variations in plant chemistry and therapeutic value of plants under different conditions of season and climate. After a historical resumé of the subject from 1849 to date, it was pointed out that there are three main lines of investigation to be followed: (a) To render India as far as possible self-supporting in her requirements of already recognised and official drugs, such as digitalis and belladonna which grow everywhere in India but are not utilised. (b) To investigate the properties of other Indian drugs of known or of supposed therapeutic value, such as *bael* and *isofgool* in dysentery, and the products of the *neem* tree as to their antiseptic and volatile oils. (c) To bring efficient yet cheap medical remedies within reach of the masses of India, since what the Indian patient wants is a hakim at four annas, and a bottle of medicine at two annas a day, whereas what he now gets is a specialist at Rs. 16 a visit and purified alkaloid at Rs. 50 per lb! (from Europe).

This paper, which covered very interesting ground, was subsequently published in extenso in the *Indian Medical Gazette*, was copied or abstracted in several of the Indian daily newspapers, has aroused attention from almost all the Provincial Governments in India and has become the basis for much present-day discussion and proposals. There was a most interesting discussion at the close of the paper in which Major Acton, Colonel Megaw and Major Knowles took part, whilst Professor Panchanan Neogi gave an account of his investigations into the composition of Ayurvedic remedies.

Dr. U. N. Brahmachari then read a paper on "Some New Amino-Antimonyl Tartrates and their Therapeutic Value."

The compounds dealt with were phenocall-, anæsthesin-, apothesine-, novocaine-, orthoform-, and acriflavine-antimonyl tartrates. Of these the anæsthesin compound could be administered painlessly by intramuscular methods, and also orally without inducing vomiting; whilst the orthoform compound was suitable for inunction. The antimony content of the different compounds varied from 21 to 29% and toxicity of these compounds to experimental animals was less than that of potassium or sodium antimony tartrates.

Dr. Brahmachari's paper led to an interesting discussion, in the course of which Dr. L. E. Napier begged for further

therapeutic tests, Major H. W. Acton, I.M.S., dwelt upon the necessity for diffusibility in any drug which claimed to have a therapeutic action in kala-azar and on the dangers of analogy between trypanosomiasis and leishmania infections, which were totally different groups of diseases. In reply Dr. Brahmachari commented upon the different therapeutic value of antimony compounds where the antimony was in pentavalent and in trivalent form respectively.

In general throughout the year the policy adopted was one of throwing the meetings open to medical visitors in the hopes that they might be attracted to join the Society, of taking full and detailed précis notes of all papers and discussions; whilst publication was in general assured, either in the form of papers published in extenso after being read at the meetings, in the *Indian Medical Gazette*, or of full and detailed précis in the "Current Topics" columns of the same journal. The facts that several of the questions and problems dealt with have led to correspondence with the different Provincial Governments and to general enquiries, whilst abstracts have been made by several of the daily papers in India show how important the activities of the Medical Section are with reference to current Indian medical questions.

On the other hand the present divorce which exists between the Medical Section and the more general activities of the Society is deplored. Modern scientific medicine of today is now breaking away from the old rule-of-thumb methods and from empiricism, and is becoming a living and experimental science. It is by degrees being realised that modern medicine *must* keep in close touch with such sciences as botany, physiology, zoology, pure and applied chemistry, mathematics and statistical methods, and above all biochemistry. These subjects are to a large extent included in the Society's general activities and it is desirable that closer co-ordination between them and the Medical Section should be secured.

R. KNOWLES, *Major, I.M.S.*

*Medical Secretary.*

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Dr. Brahmachari's paper led to an interesting discussion, in the course of which Dr. L. E. Napier begged for further

therapeutic tests, Major H. W. Acton, I.M.S., dwelt upon the necessity for diffusibility in any drug which claimed to have a therapeutic action in kala-azar and on the dangers of analogy between trypanosomiasis and leishmania infections, which were totally different groups of diseases. In reply Dr. Brahmachari commented upon the different therapeutic value of antimony compounds where the antimony was in pentavalent and in trivalent form respectively.

In general throughout the year the policy adopted was one of throwing the meetings open to medical visitors in the hopes that they might be attracted to join the Society, of taking full and detailed précis notes of all papers and discussions; whilst publication was in general assured, either in the form of papers published in extenso after being read at the meetings, in the *Indian Medical Gazette*, or of full and detailed précis in the "Current Topics" columns of the same journal. The facts that several of the questions and problems dealt with have led to correspondence with the different Provincial Governments and to general enquiries, whilst abstracts have been made by several of the daily papers in India show how important the activities of the Medical Section are with reference to current Indian medical questions.

On the other hand the present divorce which exists between the Medical Section and the more general activities of the Society is deplored. Modern scientific medicine of today is now breaking away from the old rule-of-thumb methods and from empiricism, and is becoming a living and experimental science. It is by degrees being realised that modern medicine *must* keep in close touch with such sciences as botany, physiology, zoology, pure and applied chemistry, mathematics and statistical methods, and above all biochemistry. These subjects are to a large extent included in the Society's general activities and it is desirable that closer co-ordination between them and the Medical Section should be secured.

R. KNOWLES, Major, I.M.S.,  
Medical Secretary.



### 3. A 'Witch-case' in Mediæval India.

By W. IVANOW.

In Muhammadanism, as in other great religious systems of the world, numerous survivals of natural religion and magic have always played, as they still continue to play an extremely important part which has never been fully studied or correctly estimated. Invariably disguised under a pious religious garb, these ancient elements preserve all their original power not only in the popular beliefs of Islamism or in various customs and observances of ordinary life, but often at the bottom of many of the philosophical speculations of the orthodox, and especially of the sectarians or mystics.<sup>1</sup> To the mind of the average Muhammadan in all countries many of these beliefs are inseparable from the most important principles of Islam. Such are faith in divination,<sup>2</sup> in the reality of dreams,<sup>3</sup> in the power of amulets,<sup>4</sup> special charms and incantations, peculiar forms of prayer, as not only endowed with protective virtues, but as often constituting actual cures for maladies of all kinds

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<sup>1</sup> Such are, for instance, the much discussed properties of the Divine attributes (الاسماء الحسنی) as well as cabbalistic speculations based on the numerical value attributed to every letter of the alphabet.

<sup>2</sup> The forms of divination by the Coran (*istikhāra*), by the poems of the favourite writers (*fāl*), etc., are well known. The more 'scientific' methods are those of *raml*, *jafr*, *qiyāfa* and many others. There are also many popular, and probably old methods of divination, as by looking at the blade of a knife, or at a comb, etc.

<sup>3</sup> The belief in the indisputable reality of dreams, so amazingly firm in many Muhammadan countries, is apparently based on a general (at least in Persia) theory that at the time of sleep man's spirit leaves his body and travels not only in the physical world, but also in the realm of the unseen (just as the ordinary thought is believed to do always). The 'science of dreaming' is therefore not confined only to the interpretation of dreams, but also deals with the methods of how to learn to see in dreams exactly the things which are wished for (cf. a small work on these matters, M 94 in the MS. collection of the A.S.B., without title or author's name).

<sup>4</sup> There is a great variety of forms of amulets. Several volumes would be required to deal adequately with these matters. In Persia they are usually called *du'ā* (prayer), although special terms are applied to various kinds of them in accordance with their particular shape, construction or part of the body on which they are worn, such as *sayf*, *naqsha*, *bāzūband*, etc. The prayers intended for medical use (besides those which are only recited), are written on paper, vellum of antelope (*āhū*) skin, bread, etc., in ordinary ink, saffron dye, rose-water, etc. Some of them are only recited a special number of times, at a particular hour, etc.; the others may be eaten, washed in some liquid and swallowed, or used as a lotion.

These beliefs, however, are only a few instances of an extensive lore; in fact there are almost no departments of human knowledge and activity, in which traces of similar superstitions cannot be detected. As a rule, they are all in some way connected with religion, some being ingeniously based on various spurious *ḥadīths*, or traditions of Muḥammad himself, and others on verses of the Coran, which, naturally, like all utterances torn away from their original context, admit of an unlimited variety of 'mystical' interpretations.<sup>1</sup> Although practices of malefic magic, necromancy, etc., are often regarded as impious and even occasionally persecuted,<sup>2</sup> they continue to live in dark corners and even the most devoted Muslims often not only have no objections to them but even spend much time in studying astrology, alchemy, sorcery, and other interesting matters of the same kind.

The literature of these occult sciences in Persian, Arabic, Turkish, and other languages is fairly rich, although so far entirely unexplored.<sup>3</sup> Its study would seem to promise abundant material to the ethnologist or the specialist in folklore.<sup>4</sup>

<sup>1</sup> Prof. A. Christensen, in his work, referred to in the next following footnote, described a Persian compilation dealing with what may be called the application of the Coran to magic. Similar works are common in Muhammadan 'occultist' literature. In the library of the A.S.B. there are several of them (in MSS.), as, for instance, خواص چند آیات کلام الله (M 24, ff. 25-39), or a treatise, without title, on the 'properties' of the *sūra* beginning with ان جاء نصر الله (Oc 4), etc.

<sup>2</sup> Sorcerers (ساحر) usually are regarded as dangerous offenders against public safety, but only in so far as the Muhammadan community is affected. They are quite at liberty, according to the ethics of Islamism to use their art against non-Muhammadans (cf. A. Christensen, *Xavāss-i-āyāt*, 1920, pp. 12, 33).

<sup>3</sup> Occasional, and usually very meagre, references to these practices and ideas may be found scattered in works of travellers, in commentaries upon various Persian or Arabic works, etc., but so far as I know, only very few special articles have been devoted to this subject. Besides the pamphlet of Prof. A. Christensen, mentioned above, only one substantial contribution may be recalled, i.e. E. Doutté, *Magie et Religion dans l'Afrique du Nord*, Alger, 1909. See also interesting notes on the Muhammadan magic in India: H. A. Rose, *A glossary of the Tribes and Castes of the Punjab and N.-W. F. Province*, 1919, p. 236-237. Also R. F. Burton's remarkable description of the practice as observed in Sind, 'Sindh,' 1851, pp. 180-184, sq.

<sup>4</sup> The MS. library of the A.S.B. possesses a fairly good collection of works on these subjects. Especially valuable seem to be two books on the interpretation of dreams, promising to reveal much of interest to the student of folklore, i.e. *Kāmilu't-ta'bīr* (M 131), comp. in the middle of the VIc. A.H./XIIc. A.D., by Ḥusayn Tiflīsī, and two copies of *Ta'bīr-sultānī* (M 45 and M 46), comp. in 763 A.H./1362 A.D., by Isma'īl b. Niẓāmi'l-Mulk. Of some interest may be *Tuḥfatu'l-gharā'ib* (Oa 30), by Muḥammad b. Aḥmad Dāūsī, based on an earlier Arabic work, as the author says. It deals with various methods of neutralising the evil effects of different kinds of sorcery, etc. The 'occultist' literature, in which

There is also another source of information on this subject, i.e. many allusions and occasional anecdotes which are found scattered throughout general literature. Works of the most different contents occasionally provide a good opportunity to catch a glimpse of these matters as they were in fact, and not only in theory.

The present notice is intended to draw the attention of those interested in research of this kind to a specimen of material of the last mentioned class. Studying a Persian hagiological work, compiled chiefly from various earlier sources in the beginning of the XVIIc, I came across a short anecdote referring to events of the XIII-XIV centuries, and containing a concise exposition of a really typical case of sorcery amongst the Muhammadan community of India in that remote period. In fact it is a miniature but complete 'witch-process,' which probably ended without bloodshed because the evidence against the offender was not sufficient. It throws interesting light on the psychological atmosphere of its times, and appears to be a really peculiar mixture of great piety with unshakable faith in magic rites, necromancy, in the absolute reality of dreams, and the great power of incantations. But before giving the story both in the original text and in translation, I must introduce to the reader the work from which it was extracted.

*Siyaru'l-ārifīn*,<sup>1</sup> as the book in question is called, was composed by Hāmid b. Fadlī'l-lah Jamālī, a devoted Sufi of Northern India, between 937 and 942 A.H. /1530-1535 A.D.<sup>2</sup> It contains a collection of biographical notices, or rather stories of various miraculous deeds, of some 14 famous saints of the celebrated Indian Sufic affiliation of the Chishtis, to which the author himself belonged. In the section dealing with the

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European scholars are rarely interested, is in very great demand in the Oriental book-markets. The number of the works on this subject, which have been lithographed in India only is remarkably great. These editions are usually very cheap and even with moderate means a student can collect in the principal book-publishing centres of India, such as Lucknow, Delhi, Lahore, Peshawar, and Bombay, a large library of these books in Persian, Arabic, Hindustani and many local dialects.

<sup>1</sup> See regarding it: C. Rieu, Cat. of the Pers. MSS. in the British Museum, vol. I, p. 354; W. Pertsch, Verz. d. Persischen Handschr. (P.K. Bibliothek zu Berlin), p. 556; H. Ethé, Cat. of the Pers. MSS. in the library of the India Office, vol. I, No. 637. Long ago it was lithographed in India, but this publication is not procurable nowadays. I use this work here in the MS. of the 'Government Collection' in the library of the A.S.B., No. 503.

<sup>2</sup> The first date refers to the ascension to the throne of Humayun, the Mogul ruler of India, to whom the book is dedicated. The second is the year generally accepted as the date of the author's death. (There is probably some confusion between Jamālī the poet and our author, and the date 925 A.H. assigned by some authorities as the death of Jamālī, refers possibly to the poet).

earlier periods he depended on the works of his numerous predecessors, especially on *Khayrū'l-majālis*, composed by one Hamīd in 756 A.H./1355 A.D., narrating the miracles of Naṣīru'd-Dīn Chirāgh, of Dehli, and on *Fawā'idu'l-fu'ād*,<sup>1</sup> by Hasan 'Alā-i-Sanjari, containing the discourses of Nizāmu'd-Dīn Awliyā (d. 725 A.H./1325 A.D.), delivered in 717-722 A.H. As the biographical literature of the Chishti affiliation is particularly rich, there is no doubt that the author had sufficient material at his disposal and had no need to resort to fiction or spurious legends of a later period. Therefore, leaving aside the question as to the real facts which form the basis of the story, we can accept as a fairly reliable theory that the narrative correctly reflects the ideas current on its subject in Muhammadan India of not later than the middle of the XIV century.

### Translation.<sup>2</sup>

[*Fol. 67*]. It is narrated from Shaykh<sup>3</sup> Naṣīru'd-Dīn<sup>4</sup> [*fol. 67v*] that he said: I heard from my preceptor (*pir*), the king of saints, Nizāmu'd-Dīn<sup>5</sup> (who told me as follows): Once a serious indisposition and illness affected Shaykhū'l-Islām Farīdu'd-Dīn Mas'ūd,<sup>6</sup> so that his appetite entirely departed from him and he for several days neither ate any food nor drank water. His children, disciples and followers came together and called in physicians. The latter, having examined his pulse, reported that they could not define the malady either from the pulse or from the analysis of the urine. In spite of careful study of both, pulse and urine, they could not discover the nature of the illness of the Shaykh and retired helpless. On the next day the Shaykh's sickness increased and he asked all his friends to come to him.

Shaykh Nizāmu'd-Dīn continues: I was also present in that assembly. Shaykh Badru'd-Dīn Sulaymān,<sup>7</sup> the son of the Shaykh, ordered us to occupy ourselves (with prayer). So we went and prayed. The same night Badru'd-Dīn Sulaymān saw in a dream an old man, who said to him: 'Your father,—i.e.

<sup>1</sup> There is a good copy of it in the collection of the A.S.B. (E 166).

<sup>2</sup> I place the translation before the text in order not to break the narrative for those who cannot read Persian.

<sup>3</sup> In the translation I omit all the grandiloquent titles, blessings, etc., so generously distributed throughout the text.

<sup>4</sup> i.e. Naṣīru'd-Dīn, surnamed Chirāgh, the famous Chishtī saint of Dehli, d. 757 A.H./1356 A.D.

<sup>5</sup> Here نظام الملة, obviously for the usual, and afterwards repeated several times نظام الملة والدين.

<sup>6</sup> The famous Chishtī saint d. 664 A.H./1265 A.D., whose shrine at Pākpattan in the Punjab still attracts many pilgrims.

<sup>7</sup> The son of Farīdu'd-Dīn. See about him Maṭlibu't-tālibin (Ethé, *op. cit.*, p. 321), *Sawāṭir-u'l-anwār* (ibid., p. 330), etc.

Shaykh Faridu'd-Dīn Mas'ūd,—is bewitched.' Badru'd-Dīn Sulaymān [fol. 68] inquired from the old man: 'Who has bewitched the Shaykh?' The old man replied: 'The son of Shihābu'd-Dīn the Sorcerer has done this.' There was in the town of Ajwad'han a man, called Shihāb the Sorcerer, notorious for practising sorcery. Then Badru'd-Dīn asked: 'What to do in these circumstances, and how to defeat this witchery?' The old man replied: 'Let somebody go and sit upon the grave of Shihāb, and,—then the old man recited a few words in the dream,—let him recite these words over the grave.' And Badru'd-Dīn Sulaymān in his dream learnt these words. They were as follows: 'O thou, buried here who causest misfortune! Learn thou that thy son has performed a magic act and caused misfortune. So tell him that he should take back his evil from us, otherwise let all that cleaved to us cleave unto him.' The meaning of these (Arabic) words is this: 'O thou, whoever thou art interred in this grave! Learn that according to the results of search thy son has bewitched (us), and caused misfortune. So tell him to withdraw the danger of that sorcery from us. If, however, thou wilt not say (this to him), the things that affected us, will affect him.'

When day dawned, Shaykh Nizāmu'd-Dīn with the friends who were engaged in praying by the order of the Shaykh, came with Badru'd-Dīn Sulaymān [fol. 68v] to see the Shaykh, and informed him about what happened with regard to the dream dreamed by Badru'd-Dīn.

Then the Shaykh called Nizāmu'd-Dīn and ordered him to learn by heart those words, to go to the grave of Shihāb the Sorcerer, asking the people to show it to him, to sit down upon it and recite (the incantation).

Shaykh (Nizāmu'd-Dīn) went according to the order. He inquired about the place of the tomb of Shihāb the Sorcerer. It was well known, the people pointed it out to him, he sat there and recited the words. With his hands he touched the earth.<sup>1</sup> The tomb was covered with plaster,<sup>2</sup> and at one end of it there was a little clay on the plaster. He touched the clay and, unintentionally, began to dig it. The clay fell out so that beneath it appeared a hole. He dug further, so that he could push his hand through. He continues: when that clay was cleared away, my hand went deep (into the grave). I searched more carefully and my hand touched something. I brought it out—it was a figure made of flour, into which some needles were

<sup>1</sup> The Persians, when praying over a grave, always touch it with the tips of their fingers of both hands (at the end of the prayer they invariably put a few stones on the grave).

<sup>2</sup> Muhammadan graves have a different shape in every country, but almost invariably they have a special structure above them, of bricks or stone. The plaster, mentioned here, probably covered the brick platform on the top.

stuck, and which was firmly tied with hairs from a horse's tail. That flour figure [fol. 69] I took to the king of shaykhs, Faridu'd-Din. He ordered me to pull out the needles and to untie the hairs which were knotted. Every time I pulled out a needle, his pain became less and appeased. And when I had pulled out all the needles and untied the hairs, his health returned (completely).

The Shaykh ordered then to destroy the figure and to throw it into running water. This was done accordingly. When the governor of Ajwad'han became aware of this, he sent the sorcerer, whose hands' work such a deed was, in bonds to the Shaykh, informing the latter that, obviously, this man deserves to be killed, so that whatever the Shaykh should order, it should be done in that way. The Shaykh replied: 'As God the All High has granted me health, I, in gratification for that health, will pardon the man and forgive his sin. Thou also do not interfere with him.'

#### Text.

[fol. 67] نقل است از حضرت شیخ نصیر الدین قدس سره [fol. 67v] که من از حضرت پیر خود سلطان الاولیا نظام الملة استماع دارم که وقتی حضرت شیخ الاسلام فرید الملة و الدین مسعود را قدس سره رنجوری و زحمتی معب بیش آمد چنانچه اشتبا بکلی مرفیع گشت و چند روز نه طعام خورد و نه آب نوشید، فرزندان و مریدان و معتقدان جمع آمدند و اطبا طلبیدند، ایشان چون نبض حضرت سلطان المشائخ گرفتند گفتند که ما را از استدلال نبض و قاروره زحمتی معلوم نمیشود، هر چند که در نبض و قاروره ملاحظه نمودند هیچ معلوم نکردند که حضرت ایشانرا چه زحمتست ناچار باز گشتند، در روز دوم زحمت آن حضرت بریادت<sup>۱</sup> کشید چنانچه همه یاران را پیش طلبید، حضرت شیخ نظام الدین میفرماید که من نیز در آن جماعت<sup>۲</sup> حاضر بودم، حضرت سلطان المشائخ [مراد] شیخ بدر الدین سلیمان که فرزند ارجمند حضرت ایشان است اشارت فرمود که مشغول شوید، رفتم (sic) و مشغول شدیم، همان شب خدمت بدر الدین سلیمان رحمه الله در خواب دید که پیری بدو میگوید که پدر شما را یعنی شیخ فرید الدین مسعود را سحر کرده اند، و شیخ بدر الدین سلیمان [fol. 68] از آن پیر می پرسید که

<sup>۱</sup> بریادت Here

<sup>۲</sup> جماعت Here

حضرت شیخ را که سحر کرده است، پیر میگوید که پسر شهاب الدین ساحر سحر کرده، مردی بود در قصبهٔ اجودهن او را شهاب ساحر گفتندی در سحر کردن مشهور بود، بعد ازان خدمت شیخ بدر الدین می پرسد که این کار را تدبیر چیست و بچه نوع این سحر را دفع توان کرد، پیر فرمود که یکی بر سر تربت شهاب برود و بنشیند، و کلمهٔ چند هم در خواب خواند که این کلمات بر سر گوش خواند چنانچه شیخ بدر الدین سلیمان ان کلمات هم در خواب یاد کرده، و کلمات این بود، *ایها المقبور المبتلی اعلم بأن اینک قد سحر و آذا، فقل له لیکنف بأسه عنا و اللعق به ما لعق بنا* معنی آنست که ای هر کدامی که در قبر کرده شده بدان بدرستی<sup>۱</sup> تحقیق پسر تو سحر کرده است و ایذا رسانیده پس بگو مر او را تا باز دارد باک آن سحر را از ما و اگر نگوئی تو متصل شود بدو چیزی که متصل شده آن چیز بما، چون روز شد شیخ نظام الملة و الدین با یارانی که باشارت حضرت شیخ مشغول بودند با خدمت شیخ بدر الدین سلیمان رحمه الله پیش رفتند [fol. 68v] و صورت حال باز نمودند که خدمت شیخ بدر الدین چنین خوابی دیده است، بعد از آن حضرت شیخ نظام الدین را پیش خواند و اشارت فرمود که این کلمات را یاد گیر و بر تربت شهاب ساحر از مردم پیوس و بر سر تربت او بنشین و این کلمات بخوان، خدمت شیخ باشارت آن حضرت رفت و تربت شهاب ساحر پیوسید، مشهور بود، نشان دادند، بر سر تربت نشست و این کلمات بر زبان راند و دست بر زمین زد، آن زمین تربت را گنج کرده بودند، بالای گنج بر سر آن تربت اندک گلی بود، دست دران گل زد و بیگمان بگوید، گل دور گشت چنانچه گوری از تحت آن گل ظاهر شد، بیشتر کاوید تا که دست ایشان در رفت، شیخ میفرماید که چون آن گل دور گشت دستم فرو رفت بیشتر اهتمام نمودم چیزی بدستم آید آنرا بیرون کشیدم، صورتی از آرد ساخته بود و سوزنها در آن خلانیده و مویهای دم اسب بران صورت محکم بسته آن صورت آردین را بعضرت سلطان [fol. 69] المشائخ فرید الملة والدین قدس سره بودم، حضرت شیخ اشارت فرمود که آن سوزنها ازان

<sup>۱</sup> بدرستی که Here

صورت بدر آر و مویها که بسته اند بگشایی ، هر سوزنی که میکشیدم زحمت ایشان کم میگشت و راحتی حاصل میشد تا جمله سوزنها بدر آوردم و آن مویها گشادم بنورمان الله تعالی حضرت ایشانرا صحت کلی روی نمود ، بعد از آن فرمود که این صورت را بشکنید ا و در آب روان اندازید ، همچنان کرده شد ، چون این معنی والهی قصبهٔ اجودهن را معلوم گشت ساحری که از او این حرکت بوجود آمده و برا بسته به حضرت شیخ فرستاد و اعلام داد که البته این شخص کشتنی است تا حضرت شیخ چه حکم فرماید که بدان عمل نموده آید ، حضرت شیخ فرمود که چون خدای تعالی در حق من صحتی بخشید من نیز بشکرانهٔ آن صحت عنو کردم و خطای او بخشیدم تو نیزش تعرضی نوسانی ،

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بشکنند Here ۱

#### 4. The Owl in Folklore.

By SHAMS-UL-ULMA JIVANJI JAMSHEDJI MODI, B.A.,  
Ph.D., C.I.E.

[Read before the Anthropological Section of the Tenth Indian  
Science Congress.]

##### *Introduction.*

The custom of taking omens from birds is common, well-nigh among all the people of the world, because in the whole of the animal creation, with which man comes into contact, the birds stand first. They are seen everywhere and anywhere, of one species or another. The very Etymology of words for "omen" among different people testifies to the generality of the custom of taking omen from birds. For example, our English word "auspices" for good omens, coming from *avis* a bird, testifies to the Old Roman belief of taking omen from birds. The Sanskrit word for omen is *Shakun* (शकुन) which also means a "bird." This Sanskrit word has given to the Parsees their Gujarati word *sagan* સગન for omen. In the Avesta, though we do not find the word for omen derived from a word for bird, we find, that omens were taken from birds. For example, in the Yasht in praise of Haoma, (Yasna X. 11) we read, that the seeds of the good health-giving sacred plant of Haoma were spread over a number of mountains by auspicious birds (*spenta fradakhshsta méréga*, lit. birds with good signs).<sup>1</sup> The modern Persian word for omen *margwâ* (مرغوا) also comes from Persian *margh* (Avesta *méréga*), i.e. bird. The Arabic word for omen is *tair* (طير) and it also means a bird. Thus, all these words for omen in different languages show that omens were taken from birds. For the custom of taking omens from birds in some of the countries of modern Europe, I will refer my readers to what I have said in my paper on "Superstitions common to Europe and India."<sup>2</sup> For the custom of taking omen from birds among the Parsees, I will refer my readers to my paper on "Omens among the Parsees."<sup>3</sup>

<sup>1</sup> The Vedic Soma was similarly brought down from heaven by the bird falcon.

<sup>2</sup> Journal of the Anthropological Society of Bombay, Vol. II, No. 3, pp. 161-71. Vide my Anthropological Papers, Pt. I, p. 27.

<sup>3</sup> Ibid, Vol. I, No. 5, pp. 289-95. Vide my Anthropological Papers, Pt. I, pp. 4-5.

The reason, why, of all animals, man takes omens mostly from birds, is that they are the most migratory, migrating in thousands and tens of thousands at different seasons, from one country to another, hundreds of miles<sup>1</sup> distant, some marching at the rate of 200 miles per hour. So, their arrival, in one season or another, in one country or another, presages a change of season. The English proverb "One swallow does not make a summer," illustrates this view. Now, a change of season often gladdens the hearts of men, who are tired with the rigour or a kind of monotony of a season. Hence arose, the custom of taking omens from birds.

The object of this paper is to speak particularly about one bird, the owl, which is held to be inauspicious among many people, and to present some folklore about it.

#### *The Owl in the Avesta.*

In the Avesta, the owl, which is spoken of as *pesha* (Pers. *Push* پيش), is represented, as having feathers which serve as a kind of amulet. If one rubs his body with the feathers, he is safe from the curses of his enemies. Both, its feather and its bone, protect the person holding them from enemies. They bring him help and respect from others. He is so well protected by keeping these feathers or bones on his body that no enemy can smite him. On the contrary, he becomes victorious and glorious (Behrâm Yasht. Yt. XIV 35-40). King Kavi Usa (Kai Kâus of the Shâh-nâmeh) and king Thraëtaona (Traitana त्रैतन of the Hindus, Faridum of the Shâh-nâmeh) carried its feathers or bones over their bodies and were victorious. Faridum was victorious by these means over the snake-mouthed Azi-Dahâka or Zohâk. Here, we find, that this bird, instead of being considered as inauspicious, is held to be lucky.

There is another word in the Avesta, which the late Dastur Dr. Hoshang Jamasp took to be for owl. It is *Sijdareh* (Vendidad XIII, 2),<sup>2</sup> which he reads as *gizdreh*<sup>3</sup> and compares it with Sans. मृगम् Marathi मृग Gujarati મૃગ Persian گید. He says: "In this place it is used for an owl. It is true that according to Natural History and Ornithology as developed in the present day, the owl is included in the species *Strix* or *Strigida*, but in the old times when the Avesta was translated into Pahlavi (250 or 300 B.C.), the owl was not probably classified as a distinct species and was included in the category of *gizdreh* मृग. vulture or carnivorous bird, because it feeds upon

<sup>1</sup> Vide "The Migration of Birds," by Charles Dixon.

<sup>2</sup> Vide his Vendidad, Vol. I (1907), p. 455.

<sup>3</sup> Ibid, Preface, p. VII.

flesh. There can, however, be no doubt from the general description given in the texts that the animal alluded to is an owl."<sup>1</sup>

The Pahlavi rendering of it is <sup>2</sup> kûfik, P. کوف (kûf), which means "a large owl."<sup>3</sup> A Persian lexicographer, quoted by Dastur Hoshang,<sup>4</sup> renders this word (kûf) by بوم (bûm) which means an owl. The Persian lexicographer says it is known for its inauspiciousness (be nuhûsat ma'aruf). The lexicographer quotes a poet, Ibn-Yamîn, as differentiating a literate from an illiterate, as the auspicious bird humâi (phoenix) from an owl. He says: <sup>5</sup>

نشاند بی هنر آنجا بجای اهل هنر  
ندید هیچ تفاوت ز کوف تا به همای

i.e., he made an unintelligent person sit in the place of the intelligent and made no distinction between an owl and a phoenix.

*The Reason why an Owl is held to be inauspicious.*

The reason, why an owl is held by many people as inauspicious presaging evil to the house or place where it is seen, is this: It generally seeks wilderness and out-of-the-way places for sitting and resting. When it comes to towns or cities, it generally seeks ruins and deserted places for its rest and abode. It very rarely comes to inhabited or frequented places. Hence, it is always associated with ruins, deserted places and wilderness. That being the case, when it is seen on rare occasions in inhabited or frequented places, people associate with those places an idea of ruin or mishap in future. So, the bird is always looked at with dislike. Countess Cezaresco thus refers to the cause of the unpopularity of the bird: "Besides, the prejudice against reptiles, modern popular superstition has placed several animals under a ban, and especially the harmless bat and the useful barn-owl. Traditional reasons exist, no doubt, in every case; but stronger than these, are the associations of such creatures with the dark in which the sane man of a certain temperament becomes a partial lunatic; a prey to unreal terrors which the flap of a bat's wing or the screech of an owl is enough to work up to the point of frenzy."<sup>6</sup> This idea of superstitious dislike lurks, not only among the ignorant or the illiterate, but also among some educated people.<sup>7</sup>

<sup>1</sup> Ibid.

<sup>2</sup> Ibid, p. 455, l. 12.

<sup>3</sup> Steingass.

<sup>4</sup> Vendidad, Vol. I, p. VII, n. 1.

<sup>5</sup> Ibid,

<sup>6</sup> "The Place of Animals in Human Thought," by the Countess Cezaresco, p. 112.

<sup>7</sup> I remember well an instance of my boyhood, when I was a student

The above fact, viz. the bird's fondness for solitary, deserted ruined places as its seat or abode, seems to be the real cause of its being taken by mankind as inauspicious. The following Persian story, as given by Mirkhond, in his *Rauzatūs Safa*, presents the old Persian folklore about the owl being held inauspicious from very remote times.

*Mirkhond's story about the origin of the custom of taking  
omen from owls.*

Before the time of Kayōmars, there was a kind of disorder in the affairs of the world, and sickness was much prevalent. So, several wise men met and resolved, that they should appoint one man as a ruler who can control all. After asking for divine help (*istikhârat* استخاره) <sup>1</sup> and deliberating (*istishârat* استشارة), they resolved to elect one of them as a ruler, and their lot of selection fell upon one Kayomars (قرعه اختیار بنام کیومرث افتاد),<sup>2</sup> who being thus elected, took an oath (*paēmân*)<sup>3</sup> of sovereignty. He had a son, Siâmak by name, who had retired into Mount Demâvand. One day, he started from his place to go to see his son Siâmak in his retirement. On his way thither, his eye fell upon "an owl" (*jaghd* جغد) which shouted several times. Kayomars was affected by its voice and he said to himself: "If thy news (i.e. news seemed to be conveyed by your voice), will be associated with good news (*khair*) and rejoicing (*sarûr* سرور) I wish that you will be acceptable for your intelligence (مقبوله طباع گردی). Otherwise you will always be persecuted and rejected (مطرود و مہجور)."<sup>4</sup> On going to his destination, Kayomars found that his son was killed by a huge stone hurled over him by the Divs and Âfrits. Kayomars deposited the body of his son in a well (چاه), revealed to him by God on the mountain where Siâmak lived, and he kindled a great

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of the Elphinstone High School, then located on the Picket Road, where the Government Middle School is now situated. The English Principal of the school saw one day an owl from his office-room sitting upon a part of the school building. He took up a tile from an adjoining roof, hastened to the spot where it sat, and drove it away.

<sup>1</sup> Mirkhond's Text of *Rauzat-us Safa*. Munshi Nawal Keshore's lithographed edition, Vol. I, p. 149, l. 9.

<sup>2</sup> Ibid. This statement shows, that according to tradition, primitive people selected from among themselves a king and that selection was considered to be a kind of divine work, settled by a kind of lot. Cf. the selection of Virâf for a Divine Vision. (*Vide* my *Asiatic Papers*, Pt. I, p. 1, *et. seq.*)

<sup>3</sup> It seems that according to old Iranian tradition, a kind of oath was taken by the person selected as a King.

<sup>4</sup> Nawal Keshore's Ed., I, p. 149, l. 20.

are at the mouth of that well (بسر آن چاه آتشی بلند برافروخت)  
Thus, according to the tradition, as given by Mirkhond, the owl has since then been condemned as an inauspicious bird.<sup>1</sup>

*The story of an Owl and a Mobad.*

The following story associated the owl with ruins. It is said, that at one time, a Persian King on seeing a pair of owls, asked his Mobad, i.e., his priestly minister, as to what the pair was talking. The Mobad said: "They wish and pray, that you, the reigning king, may live long, because they find in your reign many forsaken or deserted villages to wander or live in." It is said, that the king had, by his misrule, caused many a village to be deserted by the people. So, the owls had many deserted villages for their abode. They, therefore, prayed for a long life to such a bad king. This was a taunt, intended or unintended, for the king by the Mobad, and, it is said, that the king took this to heart and began to manage his state affairs better, so that, in the end, there remained very few deserted places in his kingdom.<sup>2</sup>

*Firdousi on Owls.*

It is this idea, prevalent from olden times, of associating owls with ruins, that led Firdousi to say on the fall of Persia:

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<sup>1</sup> Further on, in connection with the same story, Mirkhond describes, how the cock has come to be considered as a good auspicious bird. He was informed by some, as to where the murderers of his son had hid themselves. He started to go there, and on the way, he happened to see a white cock (Kharus-i-safid) followed by a hen (mâkian). A serpent attacked the hen, and the cock, running after the serpent, defended his hen. Kayomars, pleased with the sight, went to the help of the cock, killed the serpent and threw some grains to the cock. The cock invited the hen by moving its beak to come and eat the grain, and he himself did not eat a single grain till the hen first ate one. Kayomars was pleased with the sight. He was going on an errand to kill the murderers of his son, and all that he saw was a good omen for the result of his expedition. The fact that he, through the instrumentality of the cock, killed the serpent, which was always an enemy of man, pleased him, as all that pointed to a good omen. He proceeded further and killed the murderers of his son. Thenceforth, he declared his heirs to keep cocks and maintain them. Mirkhond adds: "It is said that no Demon can enter a house in which there is a cock; and, above all, should this bird come to the residence of a demon, and move his tongue to chaunt the praises of the glorious and exalted Creator, that instant the evil spirit takes to flight." (History of the early Kings of Persia, translated from the Original Persian of Mirkhond by David Shea, 1832, pp. 56-57). People generally do not like cocks shouting at odd hours. Mirkhond thus explains the matter: "The reason why persons draw an evil omen from the unreasonable crowing of the cock, and at the same time put him to death, is this; that when Kayomars was seized with a fatal illness, at the time of the evening service, this bird crowed aloud; and immediately after, this orthodox monarch passed away to the world of eternity." (Ibid, p. 57.)

<sup>2</sup> "Place of Animals in Human Thought," by Countess Cezaresco.

“Pardeh-dâr mi-kunad bar kasr-i Kaisar ankabut  
Bum naobat mizanad bar gunbad-i Afrasiâb.”

i.e., the spider is covering the palace of Cæsars with his webs and the owl is beating the naobat<sup>1</sup> on the castle dome of Afrasiâb.

It is said, that Sultân Mahmud also uttered these words of Firdousi when he first saw the palace of Constantinople.<sup>2</sup>

*Its unpopularity displayed by the language used for owls.*

The unpopularity of the bird is illustrated by the epithets applied to it even by poets. For example, Shakespeare speaks of it as “Thou ominous and fearful owl of death” (1 Henry VI, IV 2); “Boding screech owls”<sup>3</sup> (2 Hen. VI, IV 2); “Nothing but Songs of Death.” Obloquy is conferred upon the bird by other poets like Spencer, Shelly, etc., also.<sup>4</sup>

There is a Gujarati proverb which says યુવર નું મોત કબર વાડે<sup>5</sup> i.e., “The death of an owl (occurs) at a grave-yard.”

This proverb indicates that the bird always seeks a deserted place like a grave-yard and that its presence is associated with ruin and death. From the fact that the owl is a nocturnal bird, generally moving about at night, and from the fact, that, during the day, it seeks sequestered deserted places, we have the English word “owl,” used as a verb in the sense of “prying about, prowling, carrying on a contraband or unlawful trade.”

There is a species of owls, known as Eagle-owls. It is believed in Tibet, that when they scream, people are certain that there must be robbers in the neighbourhood.<sup>6</sup>

*The alleged reason for the bird's characteristic of loneliness.*

*The story of King Solomon.*

Now, as to the question, why the bird has the natural characteristic of remaining lonely and of living in sequestered places, the following story of King Solomon seems to give the

<sup>1</sup> To strike the drum, etc., at the change of watches (naubat) was the usual custom of the courts of Eastern Kings.

<sup>2</sup> J.B.A.S., Vol. V, No. 4, p. xciii.

<sup>3</sup> Vide Davenport Adams' Concordance to the Plays of Shakespeare (1886), p. 310.

<sup>4</sup> Vide “Distinguished Animals,” by H. Perry Robinson (1910), pp. 215-16.

<sup>5</sup> Vide the કેહેવત-મીઠી of Mr. J. N. Petit, edited by Mr. J. P. Mistri (1903), Vol. I, p. 221.

<sup>6</sup> Sven Hedin's Trans-Himalayas, Vol. II, p. 327. There is a belief about another bird that its shrieks informed people that there was a tiger in the neighbourhood.

reason: All the birds, one day, said to Solomon, that "the hated bird owl, dwells secluded in ruins and avoids habitations, nor does he repair to branched trees; and when we ask him the reason for this he says no more to us than *yâ hû yâ hû*. We entreat thee to ask him what is the meaning of this expression." Solomon, on asking the reason from the owl was told: "He that regards the world as seduced and he that knows that he will be called to account for his actions is sorrowful; so I busied myself with the thought of the "One I fear and the One I dread, and I love no other friend but Him, (Hu) and there is none in my heart except Him (Hu). So, praise be to Him, of whom it is said, that there is none but Him." This story represents the owl to be, as it were a divine or god-worshipping bird. Like human ascetics, it was less of a worldling and more of the divine. This explains, why the ancient Greeks held it to be a wise bird.

*The Position and Posture of the Owls when seen.*

It seems, that not only the mere sight of different birds, but their position and posture when seen affect the omens. That it was especially so, in Greece, we learn from Mr. Lawson's "Modern Greek Folklore." Therein,<sup>1</sup> under the heading of "Communion of God and man" (Chap. III), we have an interesting account of the Greek view about dreams, chance words, meetings on the road and auspices. It seems that in classical times, the owl symbolised wisdom. It was included in "the canon of ornithological divination."<sup>2</sup> The position and posture of birds at the time of the auguration are always important and it was more so in the case of the owls. "The 'brown-owl,' perched upon the roof of a house and suggesting by its inert posture that it is waiting in true oriental fashion for an event expected within a few days, forbodes a death in the household; but if it settle there for a few moments only, alert and vigilant, and then fly off elsewhere, it betokens merely the advent and sojourn there of some acquaintance. Another species of owl, our 'tawny owl,' I believe, known properly as "Charon's bird," is, as the name suggests, a messenger of evil under all circumstances, whether it be heard hooting or be seen sitting in deathlike stillness or flitting past like a ghost in the gathering darkness."<sup>3</sup>

*The Owl a bird of Wisdom.*

We saw in the above account of the position and posture of owls when omens were taken from them, that in classical

<sup>1</sup> Modern Greek Folklore and Ancient Greek Religion. A Study in Survivals, by John Cuthbert Lawson, 1910.

<sup>2</sup> Ibid, p. 309.

<sup>3</sup> Ibid, pp. 311-12.

Greece, it was held to be a Bird of Wisdom. It is so held in many countries. The idea of wisdom seems to have been associated with it from the fact of the solemnity of the way in which it sits. Mr. Robinson in the Chapter (XIII) on Owls in his book on "Distinguished Animals,"<sup>1</sup> thus speaks of the subject in a humorous way:

"As one sees them in their cages in the Zoological Gardens, the larger owls are persons of such extraordinary solemnity that one almost wonders whether one has not met them at the Club. Properly disposed in an armchair, the large owl, for instance, might, to the casual glance, pass well enough for an elderly member waiting for the Athæneum; and it is no wonder that in the myths of so many countries the owl has been the bird of wisdom." In its state or posture of repose, it looks wise. But in its posture of wakefulness, it looks "frankly absurd." It is its voice not being "commensurate with the dignity of its appearance" that has made it unpopular. The voice sounds as plaintive.

Countess Cezaresco, thus speaks of the cause why the bird was held to be the symbol of wisdom. "It is a most unfortunate thing for an animal if it be the innocent cause of a *frisson*, a feeling of uncanny dread. The little Italian owl, notwithstanding that it too comes out at dusk, has escaped prejudice. This was the owl of Pallas Athene and of an earlier cult. As in the case of the serpent, its wiles to fascinate its prey were the ground-work of its reputation for wisdom. Of this there cannot be, I think, any doubt, though the droll bobs and curtesies which excite an irresistible and fatal curiosity in small birds, have suggested in the mind of the modern man a thing so exceedingly far from wisdom as *civetteria*, which word is derived from *civetla*—"the owl of Minerva" as Italian class-books say. The descent from the goddess of wisdom to the coquette is the cruelest decadence of all."<sup>2</sup>

### *Luminous Owls.*

The sight of some luminous owls seems to have added to the view which made the bird a bird of wisdom. As to the luminosity of that species, the cause is not properly ascertained. Some say: "these birds acquired their luminosity by living in, perhaps, a rotten tree phosphorescent with fungoid matter."<sup>3</sup> Some attribute it to its "dieting on rats killed with phosphorus."<sup>4</sup> Some attribute the luminosity to a "fungoid

<sup>1</sup> "Of Distinguished Animals," by H. Perry Robinson, 1910, p. 212.

<sup>2</sup> "The Place of Animals in Human Thought," by the Countess Cezaresco, p. 112.

<sup>3</sup> Ibid., p. 213.

<sup>4</sup> Ibid.

growth . . parasitic on the feathers of the owl.”<sup>1</sup> Owing to their luminous appearance these birds have created the belief about “Lantern Men, Lantern Birds,” etc.<sup>2</sup>

The following Indian tale known as “The tale of the Owl as a King,” which is one of the tales known as the *Jātaka* tales,<sup>3</sup> shows that the owl was taken as a “Bird of Wisdom,” worthy to be considered as a ruler or king of birds. But it was rejected for its ugliness.

### *The Owl as King.*

“Once upon a time, the people who lived in the first cycle of the world gathered together, and took for their king a certain man, handsome, auspicious, commanding, altogether perfect. The quadrupeds also gathered, and chose for king the Lion; and the fish in the ocean chose them a fish called *Ānanda*. Then all the birds in the Himalayas assembled upon a flat rock, crying:

“Among men there is a king, and among the beasts, and the fish have one too; but amongst us birds, king there is none. We should not live in anarchy; we too should choose a king. Fix on some one fit to be set in the king’s place!”

“They searched about for such a bird and chose the owl; Here is the bird we like,” said they. And a bird made proclamation three times to all that there would be a vote taken on this matter. After patiently hearing this announcement twice, on the third time on rose a Crow, and cried out:

“Stay now! If that is what he looks like when he is being consecrated king, what will he look like when he is angry? If he only looks at us in anger, we shall be scattered like sesame seeds thrown on a hot plate. I don’t want to make this fellow king!’ and enlarging upon this he uttered the first stanza:

The owl is king, you say, o’er all bird-kind:  
With your permission, may I speak my mind?’

“The Birds repeated the second, granting him leave to speak:

You have our leave, Sir, so it be good and right,  
For other birds are young, and wise, and bright.’

“Thus permitted, he repeated the third:

I like not (with all deference be it said),  
To have the owl anointed as our Head.  
Look at his face! if this good humour be,  
What will he do when he looks angrily?’

<sup>1</sup> *Vide* the “Contemporary Review” of July 1908, the article on Luminous Owls and the Will of the Wisp,” by Mr. Digby Pigott, p. 64.

<sup>2</sup> *Ibid.*

<sup>3</sup> *Jātaka Tales*, by H. F. Frances and E. J. Thomas (1916), p. 213.

"Then he flew up into the air, cawing out: 'I don't like it! I don't like it!' The owl rose and pursued him. Thenceforward those two nursed enmity one towards another. And the birds chose a golden Mallard for their king, and dispersed."

*The use of Owl in the Economy of Nature.*

In the great economy of nature, everything has its use. We see that illustrated even in the case of this bird, which has been hated and disliked by man from the time of Kayomars, the very first reigning monarch of Iran, passing through the classical times of Greece and Rome down to our own times, in all parts of the world. Mr. Robinson says: "The proof is overwhelming that the generality of owls confer incalculable benefit on man by the destruction of rats and mice and voles, as well as many species of insects which are 'noxious' from the human point of view."<sup>1</sup>

Man generally creates his thoughts about others from what he sees of their characteristics. He associates his thoughts about a bird, an animal, or brother-man to its or his usual prominent characteristics, nature or work which strikes him most. Take for example the case of priests. Though they officiate on both occasions, joyful or sorrowful, they are more associated with sorrowful occasions like sickness or death, because grief has often more marked effects upon one than joy. So, their appearance on some occasions, for example, early in the morning, is taken as an ill-omen by some among several people. While travelling in Europe I especially noticed this in Italy. Similar seems to be the case with the sight of owls. Their usefulness in the economy of Nature is lost sight of and another feature is taken into consideration in taking an omen from its sight.

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<sup>1</sup> "Distinguished Animals," p. 221.

5. Some Variations in the Customs and Manners of the  
Telugus and Tamils of the Godaverī and  
Tinnevellī Districts.<sup>1</sup>

By K. C. VIRABAGHAVA, M.A., *Rajahmundry, Madras.*

1. The president of Section H (Anthropology) of the British Association of Science which met at Hull in September last defined anthropology as "the study of the origin and evolution of man and his works" and said further that it ought "not to be limited to the study of backward peoples but extended to such civilised peoples as those of the Far East and Hindustan. We have much information concerning the arts, languages and official religions of these regions; too little concerning the physical and mental traits of their *masses*, their customs and actual beliefs." A civilian writer on "native South Indian life" recently lamented that "amongst the many books which have been published on India and Indian topics, it is rare to find one that treats of the south. Since the time of Clive and Hyderali, historical interest has centred in the north. Travellers prefer to visit the famous cities of the Punjab and the North-West Provinces, the gardens of Kashmir and the mountains of Nepal, rather than the less attractive towns and districts of the Southern Presidency." In the light of the observations of the two gentlemen mentioned above, I shall require no apology in attempting to describe some of the customs and manners of the South Indian peoples and I am restricting my observations specially to conditions as they exist at present primarily among the Brahmins and secondarily among the others of the Godaveri and Tinnevellī Districts of the Madras Presidency. The former is mainly peopled by the Telugus and the latter by the Tamils and my endeavour shall be to compare and contrast some of their customs and manners.

2. It is an open secret that, in South India, people frequent open plains to answer their calls of nature, especially the banks of rivers, tanks and wells. This may appear very insanitary and unhygienic; nevertheless it is there. Many decades of municipal and union administration have not been able to eradicate this bad custom. Nor has the enlightened sanitary consciousness of the educated men shown any improvement in this matter. However the people in the north invariably carry a *chombu* (vessel) with them when they go

<sup>1</sup> A paper submitted to the Anthropology Section of the Indian Science Congress held at Lucknow in 1923.

to the river banks for answering their calls of nature, take the water in it and use it for washing purposes; while the wretched southerners wash their buttocks almost without any exception in the river water itself and immediately they will clean their teeth and bathe in it. One noteworthy feature is that both stick to their own custom even when they sojourn in other places. Thus the Telugus, along with their north Indian brethren, have this to their credit that they do not physically defile the river water sacred to the Hindus.

3. The Telugu women who bathe in the Godavari river very rarely strain their wet cloth in the river itself. They return home dripping; but their sisters in the south will strain their cloth well, dress again with the dry and moist cloth, and return home. It is said that the sacred (goddess) river ought not to be defiled by pouring the strained water back into it and hence the custom. However it is to be doubted if it is sound from considerations of health. Another peculiarity is that the northern women wash their clothes by beating them between their feet kept at right angles. In the south they stand on a lower step and rub their clothes on a step higher above and never have they to exert so much as their sisters have to do in the north. There are not to be found, near the water in the Godavari, rows of long steps of stones built for the convenience of the bathers as there are in the Cauveri or the Tamraparni. Both men and women adopt the same method and even near the wells the washing stones are not generally kept at a higher level from the ground. The method of ramming the clothes on a stone between the feet is characteristic of the Telugus of the north. Furthermore, the women of the north are physically stronger perhaps than their sisters in the south, for they are able to carry big heavy brass vessels filled with the river, or well water, a pretty long distance. The vessels used in the south (what are called *kudams*) are generally thin and small. One noteworthy feature is that the Telugu Brahmin women invariably keep the big heavy vessel filled with water on their left shoulder and never on the waist. Whereas the *kudams* are placed only on the waist when the caste women carry them or on the head by the low caste cooly women in the southern districts. (The latter is found among the other caste women in the northern districts.)

4. Now I come to the matter of dress. Much has been written on this and some of the conditions have changed in recent years. It is very difficult to find a middle class woman in the south clothed with a *saree* costing less than 30 to 50 rupees even for ordinary wear and the richer classes have almost a craving for costlier cloths. The cloths are commonly 18 cubits long, made of silk and dyed with lac for 10 or more inches on one border and with saffron dye on the other,

throughout their length, with the interval decorated with different patterns. And they wear this, day in and day out. This is economically oppressive and physiologically unsound. In refreshing contrast to this, one finds that the women of the north have a simpler taste and are content with *sarees* 10 to 12 cubits long, only made of cotton and occasionally interspersed with silk. In Rajahmundry it is possible to get a *saree* for four to ten rupees, while it is almost an impossibility in the south to purchase one, however cheap, for less than ten rupees. Again women who have their husbands living, that is *Sumangalis*, will never wear a white cloth in the south, that being specially reserved for widows, but the Telugu women have no scruples in the matter and the *Sumangalis* wear bordered white as well as coloured cloths, while the widows here also wear usually only a white cloth without a border. It appears these customs are more exacting in the south than in the north.

5. In describing the life of the Uriyas Mr. S. P. Rice wrote twenty years back with regard to their dress among their women as follows: "The dress of the cooly class reaches only to the knees and often not so low—The process of robing is very simple—The cloth is tied round the waist once, tucked in at one corner and thrown over the shoulder once or twice as its length may allow and the toilette is complete—a somewhat simpler arrangement than the powders and patches, the unguents and perfumes of Belinda's bed-room—women who do not usually leave their own houses, women, that is to say, of the better class, wear the cloth reaching down to the ankles and put on one with ampler folds, should they be called upon to leave the house at an unusual hour." This is true more or less even now of the Tamils and Telugus. The Telugu Brahmin women leave some folds of their cloth in the front, have a broad *kacha* at the back, visible outside, extending from the left to the right waist and finally leave the end flowing over from up the left shoulder in the front and then along the right at the back, whereas the Tamil Smartha Brahmin women have plenty of folds near the left leg, have a narrow *kacha* at their back and cover it up by rounding the cloth once and then bring the rest of it up the right shoulder in the front and then along the left shoulder. Thus 18 cubits of cloth are used up. In the south the Ayyangar, the Madwa, and the non-Brahmin women have their cloth brought up only along their left shoulder in the front first and then the end of the cloth along the right shoulder just as the Brahmin Telugu women do in the north. But many women of the other castes in the north dress almost like the Tamil Smartha women of the south. I have not been able to ascertain the rationale for this difference in the mode of dress. But it came recently to my notice that an old orthodox Telugu

Brahmin of the north had objections to take his meal from the hands of a Telugu Brahmin woman because she had the upper portion of her dress brought up the left shoulder in the front and then along the right shoulder at the back and also had glass bangles in her hand. And I have seen the Telugu women wearing their cloth in the reverse way on Sraddha days, thus showing the ordinary way of wearing a cloth, adopted by the Smartha women of the south, being more orthodox, and perhaps spiritual too. So he cooked his own food and ate, while he was staying in a portion of the house occupied by me at Rajahmundry.

6. Furthermore, the Brahmin women of the south are very punctilious with regard to their cleanliness (?) in the course of the day. They bathe early morning and wear a cloth, washed, dried and kept unpolluted the previous day. Once they wear it, they will not touch any old cloth, shirt, or coat and they will not touch a cloth washed by a dhoby (washerman), or worn from the previous day. They will not touch even their child wearing a used shirt. Whereas in the north the Brahmin women bathe in the morning and wear a new cloth but they have what they call a *madi saree* and, if they wear it, they become pure and clean and they do this whenever they cook or eat their food; but at other times they change their *saree* and then they may touch any cloth, even including bedding. This is a striking contrast between the south and the north.

7. The Telugu Brahmin men are very careful and insist upon it, to wear a silk when they eat both day and night. At other times they only wear cotton cloth but in the south the silk is worn by the men only when they perform some ceremonies, or puja, or when they return after their bath from the holy river and in their eyes a silk becomes polluted, or unfit for puja purposes, if it is worn during the eating time—a fact quite contrary to that obtained in the north. While on this subject, I may mention that ordinarily the southerners use the plantain leaf, while using it as a plate for meals, in a horizontal manner whereas the Telugus use it in a vertical manner. Of course it will be very difficult, if a leaf is long, to reach the substances at the farther end. Still the system is there.

8. Before I leave the subject of dress, I will refer to one other characteristic difference. The Tamil Brahmin women reserve a cloth for their menses period and wash it themselves after their bath and take it home. But the Tamil non-Brahmin women have no special cloth for this purpose and after their bath they get it washed by a washerwoman. This latter custom is prevalent among the Telugu Brahmin women. They expect a similar practice to be adopted by the Tamil Brahmin ladies who happen to live amidst them. It appears

that a southerner was obliged to quit from a house which he occupied at Rajahmundry, because the lady refused to have her menses cloth washed by a washerwoman. And I know of a case when a southern lady was applauded by her landlady when she adopted the custom of the north in her own case, by putting her cloth to a washerwoman. Such is the rigidity of custom in some of its aspects.

9. I shall briefly allude to one item in wearing jewels. The Telugu Sumangalis, whatever their age, have a silver anklet in their legs. Whereas the Tamil Sumangalis, as a rule discard it even when they are twenty or twenty-five. I have seen aged Telugu Sumangalis wearing anklets in their legs.

10. Even peasants in the Telugu parts, especially at Rajahmundry, sleep only on some sort of cot or other. Rope cots are very cheap and plentiful. In the Tinnevely District palmyras are found in great numbers and still the cots, the mattress of which is spun with the palmyra-leaf-stem fibre, are considered generally as a luxury. And only rich and upper middle class people possess cots and, even then, only for males. In Rajahmundry one can see every one of a family, male and female, being provided with a cot.

11. I shall close my paper with one other characteristic difference. This time it is as regards the treatment of a patient dangerously ill. In Rajahmundry and other places if a patient is in his or her critical stages, he or she is removed to the street, or road side, in front of the house even before the life of the individual is out. Recently an intimate friend of mine saw with his own eyes a newborn babe, scarcely twenty days old, exposed to the chill of the night on the outside because it was about to die. Another friend saw an enclosure on the King's highway wherein a man, in his dying moments, was seen lying. A Tamilian sub-magistrate's wife was seriously ill some time back and it appears the landlord of his house visited his tenant's house every day and implored him to remove the patient to the street outside. It was only his magisterial authority which made him do otherwise. In the Tamil country, even after the expiry of life, the bodies are not removed to the front of the house until and unless most of the relations have met and everything is made ready for removing the body to the cremation ground. With such customs when Tamilians in Government service are posted to the Telugu parts, they feel a good deal of inconvenience with regard to this matter. When I questioned a Telugu friend of mine about this, he told me it was considered to be improper for individuals to be allowed to die on cots and hence the unusual custom; but why should the body be removed before the person is dead, exposed to the inclemencies of the weather and the glare of the public? Possibly only superstition will account for this.



## 6. The Nose-ring as an Indian Ornament.

By N. B. DIVATIA, B.A., C.S.

We find at present the nose-ring worn by Hindu ladies almost all over India in a variety of shapes. In Gujarāt, Mahārāshtra, Sindh, the Punjab and in parts of Upper and Central India, the Hindu lady decks herself with a nose-ring. It is at present considered a sign of married bliss,—a widow may not wear a nose-ring. How old is this institution of the nose-ring in India? We find no mention of the nose-ring in Sanskrit literature, lexicons included. It can be safely asserted that this ornament is unknown to Sanskrit literature or ancient Indian civilization.

The words for the nose-ring are : बाळी (*vāḷī*), नथ (*natha*), and वेशर (*vesara*) (old literature) in Gujarātī, नथ (*natha*), नथनी (*nathanī*), वेशर (*besara*) in Hindī, नथ (*natha*) in Sindhī, नथ (*natha*) in Marāṭhī. बाळी (*vāḷī*) is so called because of the gold wire बाळो (*vāḷo*) which is passed through the hole bored in the nose and forms part of the nose-ring. नथ (*natha*) is derived from णत्था (*ṇatthā*), a Deśya word meaning “a nose-string” such as is passed through the nose of animals (bullocks, camels and the like); see Hemachandra's *Deśināmamālā*, IV, 17. नासारज्ज (*nāsā-rajjū*) is the only sense there given, the illustration also speaks of a नासारज्जुराहेनदृषभ— a bull without the nose-string. The meaning of a woman's nose-ornament is evidently a latter day development. णत्था (*ṇatthā*), gives नाथ्य (*nāthya*), nose-string and नथ (*natha*),—a woman's nose-ring. नाथवु (*nāthavū*) is a verb made out of the noun नाथ्य (*nāthya*); नाथवु (*nāthavū*) meaning to pass a string through the hole bored in the nose. वेशर (*vesara*), (or H. वेशर (*besara*)), is a word not traceable to Sanskrit and must have evidently come from some unknown foreign word; नकवेशर *naka-vesara* (नक *naka* = nose + वेशर *vesara*) is often found in literature.

The nose-ring in India is of varying shapes and worn in varying ways. The Gujarātī lady has the wall of her left nostril bored, the Madrāsī has the right one so treated. The ornament varies from a mere gold (or with poor people a brass) wire with a screw-shaped coil and a loop at one end and a hooked arrangement at the other, to an expensive setting of pearls and diamonds, rubies and emeralds, which sometimes

represents in a distant way the figure of a peacock and this fact gives the ornament the name of मोर (mora), in Gujarāṭī.

नारी र्हारी नामिकानो मोर न्हाय भूषण चितनी चोर ।

(*Okhāharana*, by Premānanda.)

The Sindhi nose-ring is so heavy that its lower part is supported by a thin braid of the wearer's hair, brought down across the face and tied up with the ornament. There are other nose-ornaments called कण्ठी (*kāṇṭhī*) (a gold piece of the shape of a mushroom, with one end passed through the hole in the nostril and secured by a screwed up stopper, and the other end set with six or seven pearls arranged in a circle and a diamond or other gem in the centre; another called जड़ (*jaḍa*), a single gemmed article of the above make. Over and above these is the बुलाक (*bulāka*) or बुलाख (*bulākha*), consisting of one or three pearls (the middle one being a long shaped pearl) strung in a gold wire, which is passed through a hole bored in the wall between the two nostrils. This ornament is worn mainly by Mussalman ladies; no Hindu lady wears it; occasionally Hindu boys are so decorated when they have survived several children born to their parents before them. Such boys have the proper name of बुलाखी (*Bulākhi*) (दास, राम) (*dāsa rāma*) or नाथो (*nātho*) (नाथालाल, नाथ शंकर) (*Nāthālal, Nāthā-Śankara*) meaning one who is subjected to the process of नाथवु (*nāthavū*) (boring the nose).

In an article by R. P. Unrigar "The Dress of Ardvī Sura, and the toilette of the Hebrew Lady" at pp. 95ff. of the "Dastur Hoshang Memorial Volume" nose-rings are mentioned among the Hebrew Lady's ornaments in De Quincey's essay on the "Toilette of the Hebrew Lady," and also as ornaments worn by men among the Medianites.

I have said that there is no mention of the nose-ornament in Sanskrit literature. I am confronted by some with the following *śloka* supposed to be in the *Bhoja-prabandha* :—

नामाभूषाङ्गदपिता वक्रिवाहो दृगञ्जनम् ।

अहो मायं गुर्जरीणां गृहसंमार्जने मनुः ॥

The purport of this verse is this: Lucky are the women of Gujarāt, for their nose ornament is represented by the father of *Angada* (Vāli), the eye-paint is represented by the animal ridden by Agni, (viz. the ram, मेघ *meṣa*), and their houses are cleansed by Manu (Sīvarṇī सावर्णि, a matronymic of Manu). Leaving aside the fact that the *Bhoja-Prabandha* is a notorious forgery,<sup>1</sup> this particular verse stands self-condemned as it

<sup>1</sup> The genuineness of this verse is further discounted by the fact that it is found neither in Ballāla's *Bhoja-prabandha* nor in the *Bhoja*.

is based on puns on words which are purely Gujarātī either by corruption or otherwise, thus :—

वाळी (vālī) Guj. = a nose-ring ;

वालि (vālī) Skr. = the father of the monkey Angada.

मेण (meṣa) (from Sanskrit मसि (masi) = collyrium used for painting the eyelashes.

मेघ (meṣa) = a ram.

सावरणी (sāvaranī) = (Skr. संमार्जनौ (sammārjanī) through several stages (in Prākr. and Ap.) = a broom.

सावर्णि = the son of सवर्ण (Savarṇa).

I must therefore summarily reject this verse as an affront to scholarship.

Now, how do we account for the absence of the nose-ring in ancient India ? My belief is that this was due to the fact that the nose-ring was a Moslem importation, and that, originally a symbol of slavery, this nose-ring was invested with a different value, as a mark of adornment of the human frame. Would it be permissible to guess that the woman's nose-ring has a sinister significance of the slave-like condition of woman in the days of degraded civilization, and its conversion into an ornament was a soothing unction meant to flatter female vanity ? That this nose-boring (as also ear-boring) was an indication of slavery in Arabia and other parts is an admitted and well-known fact. This was known in India as late as V.S. 1685 (A.D. 1629) as is seen from the following verse in a Jaina writer's work in the Gujarātī of his days :—

तुं चेला ने ए उसाद ;  
गुरु सेतो क्यूं करणा वाद ?  
गुरु वेचे पकडो तुज हाथ,  
फाडो नाक परेवे नाथ.

(*Hiravijaya Sūri-Rāsa*, XXVII, 9.)

The verse refers to an incident in the life of the Jaina Saint Hiravijaya ; a pupil of his rebelled against him, and the pupil was addressed by a mounted policeman as above ; the verse therefore contains a mixture of bad Urdu and Gujarātī. The policeman says : You are his pupil, and he your master ; how dare you defy your *guru* ? The *guru* has power to lead you by the arm (to the slave market) and sell you, and to bore your nose and pass a nose-string through it.

*prabandha* embodied in Merutunga's *Prabandha-cintāmaṇi*, but forms part of several admitted interpolations in a translation of the latter work by one Dinānātha Sāstrī.

But I am told that the nose-ring is not known in Persian literature or language. I ask—what is the *bulāk* (बुलाक्) the single ring, pearl-strung, pendant worn through the hole in the wall between the two nostrils, but a Moslem ornament. The dictionary compiled by Khan Bahadur Nawab Aziz Jang Bahadur of Hyderabad (Deccan), *Asaf-ul-lugāt*, gives and explains the word *bulāk* fully and the upshot of his discussion is—

That the word means (1) a hole; (2) the nostril, (3) the string passed through a camel's nose, and (4) nose-ornament. He says that a majority of the authorities regards the word as Turkish. The Turks regarded the thing as an Eastern ornament. (Arabia and Persia would be East to them.)

Another dictionary, *Gayās-ul-lugāt*, gives as the meaning of *bulāk*, a nose-ring, an ornament of women (taken from Turkish). Johnson does not give the word *bulāk*, presumably because it is neither a Persian nor an Arabic word.

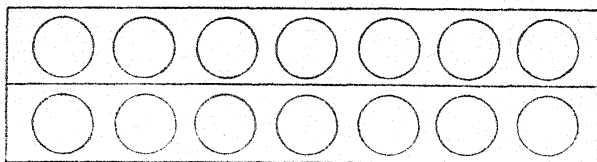
The meaning of *bulāk*, first as a camel's nose-string and then a woman's nose-ring, presents a close parallel in the evolution of word-meaning to *नथ्या* (*natthā*) (Deśya) coming to give two senses in Gujarātī: *नाथ्य* (*nāthya*) a nose-string and *नथ* (*natha*) a nose-ring. This by the way, but as a significant factor.

It seems that the nose-ring was thus originally an importation into India from the Moslem countries. How the *bulāk* gradually evolved into the *नथ* (*natha*) nose-ring worn through the exterior side of the nostril, is a question which I have been unable to answer. It will be interesting if more light was thrown by others on this whole question.

7. Notes on a Type of Sedentary Game prevalent in many parts of India.

By HEM CH. DAS GUPTA, M.A., F.G.S.

The type of sedentary game which is the subject matter of this note is usually played on a plank on which a number of shallow depressions have been scooped out; the depressions are filled with small pieces of stone, cowries, or seeds, etc.



Plan of the board used to play the game known as *Máwkár kátiyá*.

My attention was first drawn to this game in June, 1923 at Cherrapunji. Among the Khasis the game is known as *Máwkár kátiyá* (= going round the slab or plank). It may be mentioned that though a wooden board in which rough circular and shallow depressions have been scooped out in two rows, the number of rows in each hole being seven, is generally used, sometimes, specially on fair days, the game is played outside the house on stone slabs. Two persons are necessary for the play and, to start with, five small stones are kept within each depression. One of the players picks up the stones from a depression lying in the row just next to him and goes on putting one piece of stone into each depression. As soon as he has done with the five pieces he started with, he picks up all the stones lying immediately in front of the depression where the last piece was deposited. He must repeat this action till, after having deposited all the pieces that he may carry in his hand, he comes to an empty depression lying immediately in front of the one where the last piece was dropped. In this case all the pieces of stone lying within the depression immediately next to the vacant one will come into his possession and the other player will begin the game, following exactly the same method, each playing from right to left along his line of depressions and from left to right along the line of depressions belonging to his adversary. The players will thus keep on the game alternately till all the pieces have been removed from the plank, with the general result that one of the players is in possession of more than 35 pieces of stone

and the other less. The game will now be started for the second time but not by the player who started it on the previous occasion and one peculiarity will be observed while arranging the pieces. Suppose, for example, that after the end of the first game, one player finds that he has 37 pieces in his possession, then he will arrange 35 pieces in the usual way, while two (i.e. the pieces he has obtained in excess of 35) will not be placed in any of the depressions, but will remain to his credit while the game is being played for the second time. The other player will now arrange the 33 pieces, placing 3 within the depression lying to the extreme left along his line, while the other six will contain 5 pieces each. On this occasion the following additional rules will also be observed:—

(a) The person that has got two pieces extra will have all the single groups of 2 pieces that may accumulate within one depression while his adversary is playing to his credit. While the latter will have all the single groups of 3 pieces that may accumulate within one depression to his credit while the former may be playing.

(b) The winner will have the depression to his extreme left covered by his palm and gain one piece every time he passes round this depression, while his adversary will not be allowed to drop any piece in it.

(c) The pieces that will be gathered in the depression where the three pieces were placed will always come to the possession of the winner.

These rules will, certainly, vary according to the difference in the number of pieces possessed by each player after the end of any game. If we, for example, suppose that the winner has got 47 pieces after one game, then two depressions beginning from the right of his adversary along the row belonging to his adversary will be kept covered over and none will be allowed to place any piece inside these. The games will be continued in this way and the person who succeeds in capturing all the pieces of his opponent will be victorious. It is clear that the rules of the game are a little complicated and as I had to obtain my information from an old Khasia woman with the help of an interpreter I would not be surprised if it was found that the rules enumerated above required correction. I sincerely hope that, as a result of the publication of this note, some better informed person may come forward and give us (possibly) a more correct and complete account of the game.


It is interesting to note that a game like this is prevalent in many parts of India. Lt.-Colonel Shakespear has described a game like this among the Lushais. The game is called "Vai lung thlan"; the board has 12 shallow depressions in two rows and is played according to rules different from those stated

above.<sup>1</sup> A similar game played in parts of Orissa is known as *Kánji-guti*. One hundred and forty-five pieces are required to play this game. One piece is kept within one depression of the central pair, while the other depression of this pair is kept empty and 12 pieces are placed within each of the 12 remaining depressions. As I gather from my Ooriya servant, the rules of the game are mainly the same as are followed by the Khasis with some differences. In the case of the Orissa game one row of depressions does not belong to one player, but the six lying on one side of the central pair belong to one player and the other six lying on the other side of the central pair belong to the other player. During the first run of the play no piece is to be dropped in that depression in which one piece was placed at the beginning of the game. Then the rules observed by the Khasis are generally followed with the important exception that none will be able to play with the pieces lying with the central pair of depressions, i.e. they cannot be taken out of these depressions and dropped in the succeeding ones but the pieces lying within the central pair can be captured like the pieces lying in the others. In the Orissa type the pieces are moved from left to right and the player who captures more pieces at the end of each game is the winner, and the result of one game is not carried over to the next to finish what may be called a set.

A game of this type is also prevalent in the Madras Presidency. It is called *Omangunta peeta* (a plank with holes) in Telugu and *Palanguli* (a plank with holes) in Tamil, and for the detailed information about the rules that are followed I am thankful to Mr. V. V. Rau of the Bengal Nagpur Railway. There are fourteen shallow depressions in two rows, seven being in each row. In the central depression of each row only one piece is placed, while inside each of the rest are placed six, twelve or twenty-four pieces. The usual rules of the game are followed and the special point to be noted is that like the Orissa game none will be able to play with the pieces lying in the central pair, and though they may be captured according to the ordinary rules of the game they will be removed only at the end of each game, and the pieces lying in a central depression are to be shared equally between the players if each of them in course of his play dropped down his last piece in a depression separated from the central one by an empty one or the pieces lying in the central depression may belong to none, and in that case they will not be removed from their position. If the number of pieces lying in a central depression is odd, one will be left in it and the rest will be equally divided between the

<sup>1</sup> The Lushai Kuki Clans, p. 39, 1912. According to this author a similar game is played in many parts of Africa and is known as 'Mancala Bao' or 'Warri.'

two players, but if it is even two will be placed in the central depression and the rest will be divided equally between the two players. It should also be noted that when a player succeeds in capturing pieces lying in a depression, he will also seize all the pieces that may be in the depression opposite. At the end of one game each player will arrange the pieces he has been able to capture in the line of depressions next to him and those which may be vacant will be supposed to be non-existent in course of the succeeding game. The successful player will be he who will be able to capture all the pieces. The pieces are moved from left to right.



## 8. On the Occurrence of *Ostrea gryphoides* Schlotheim in Calcutta.

By J. COGGIN BROWN, O.B.E., D.Sc., *Superintendent,  
Geological Survey of India.*

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Our knowledge of the deeper strata underlying Calcutta is derived from the results of one boring, sunk to a depth of 481 feet in Fort William during the years 1835 to 1840, for although several holes have been drilled within recent years, some to considerably greater distances than this in the search for sub-artesian water, the logs of the bores do not appear to have been published and have certainly not found their way into the archives of the Geological Survey of India.

In the Fort William boring no trace of marine deposits was detected, indeed as Mr. R. D. Oldham has pointed out,—“there appears every reason for believing that the beds traversed, from top to bottom of the borehole, had been deposited either by fresh water, or in the neighbourhood of an estuary. At a depth of 30 feet below the surface, or about 10 feet below mean tide level, and again at 382 feet, beds of peat with wood were found.... Moreover, at considerable depths, bones of terrestrial mammals and fluviatile reptiles were found, but the only fragments of shells noticed, at 380 feet, are said to have been of fresh water species.”<sup>1</sup>

In 1904, while excavations were in progress for the foundations of a new building in Clive Street, an oyster band, a few inches in thickness, was met with about 5 feet below surface level. It was examined by the late Mr. E. W. Vredenburg of the Geological Survey of India.<sup>2</sup> He reported that the stratum covered a space of at least 100 feet square, that one foot, or a little less, of brown mud intervened between the top of the oyster bed and the bottom of some old brick foundations, and further, that the underlying stratum consisted of black mud. The oysters were recognised by Col. A. W. Alcock, F.R.S., at that time Superintendent of the

<sup>1</sup> R. D. Oldham: “A Manual of the Geology of India,” pp. 432, 433 (1893).

<sup>2</sup> E. W. Vredenburg: “Recent or sub-recent marine bed in Calcutta.” *Rec. Geol. Surv. Ind.*, Vol. XXI, pp. 174-176 (1904).

Indian Museum, as identical with a species living in large numbers in the mud banks near the mouths of the channels of the *Sundarbans*. Mr. Vredenburg was definitely of the opinion that the oyster bed was of marine origin, that it was *in situ* and moreover, geologically of very modern age. The large size and robust appearance of the shells led him to believe that it was improbable they flourished much above low water mark, though this implied a relative position of the sea and land decidedly different from that prevailing at present, for the altitude of the oyster bed is scarcely ever reached even by the highest spring tides of the Hooghly now.

Mr. Vredenburg's view was evidently accepted by Sir Thomas Holland who wrote in the following year (1905) as follows: "The discovery in July last of an old oyster bed in Calcutta at a level well above present high tide mark shows that besides the general depression which has occurred to permit of the accumulation of alluvial deposits in the Gangetic delta, there have been oscillations also of the relative level of sea and land during recent geological times."<sup>1</sup>

Scattered about the mud heaps by the side of the trenches a number of other shells were picked up and Dr. Fermor, who visited the excavations in July 1904, was informed by the overseers that they were found principally in the layer of mud underlying the oyster bed.<sup>2</sup> These remains were identified by the late Dr. N. Annandale, C.I.E., Director of the Zoological Survey of India, with the help of Mr. H. B. Preston and it is noteworthy that they write of the deposit not as a marine but as an estuarine one.<sup>3</sup> With the exception of a barnacle, *Balanus patellaris*, Spengler, which has been found living in ponds containing very little salt in solution and a polyzoon, a variety of *Lepralia* (*Escharioides*) *occlusa*, Busk, which coated some of the oyster shells in profusion, the recognisable remains consisted of molluscan shells though there was, in addition, a mammalian bone probably belonging to a large dog or wolf. A list of the shells is given below:—

*Telescopium fuscum*, Ch. A common living species and essentially an estuarine form.

*Paludina* (*Vivipara*) *bengalensis*, Lam. One of the commonest freshwater shells in Lower Bengal.

*Ampullaria globosa*, Swains. This is also a very common freshwater shell in Lower Bengal.

<sup>1</sup> Sir T. H. Holland: "General Report of the Geological Survey of India for the Period April 1903 to December 1904." *Rec. Geol. Surv. Ind.*, Vol. XXXII, pp. 136 (1905).

<sup>2</sup> E. W. Vredenburg: *Loc. cit.*, p. 176.

<sup>3</sup> N. Annandale: "Second Note on a Recent Estuarine Deposit below Clive Street, Calcutta." *Rec. Geol. Surv. Ind.*, Vol. XXXVII, pp. 221-223 (1908).

? *Aricia moneta*, Linn. An essentially marine mollusc. This shell was at one time used as money in Lower Bengal and as it is only represented by one small, very worn and polished specimen, its presence may be purely adventitious.

*Planorbis exustus*, Desh. A common form in ponds around Calcutta.

*Anomia achæus*, Gray. A common species in the estuary of the Ganges.

*Arca alamsiana*, Dkr. A single imperfect specimen.

*Ostrea cucullata*, Bow. This oyster is common in brackish water.

*Ostrea canadensis*, Tk. This is the large oyster of the Bay of Bengal now known to be *Ostrea gryphoides*, Schlotheim.

Dr. Annandale concluded that the Clive Street deposit was an estuarine one from fairly near the upper limits of brackish water, as indicated by the presence of essentially freshwater species known to live in ponds and canals containing a small percentage of salt in solution.

In 1909 or 1910 the Geological Department of the British Museum received several large oyster shells which had been found in a soil of sandy loam and mud about 6 feet below the level of Clive Street, during the excavations for the foundations of Gillander House. These shells covered a space of 10 × 4 × 1 feet and the bed was underlain by good blue clay. An exhaustive study by Messrs. R. Bullen Newton and E. A. Smith led them to the conclusion that the large living oyster of the Bay of Bengal is distinctly separate from the Atlantic form *Ostrea canadensis* found off the coasts of North-Eastern America, that it is identical with the oysters of the presumed geological deposit of Calcutta, a conclusion already arrived at by Col. Alcock, and that both these and the so-called *Ostrea crassissima* of the Miocene period belong to one and the same species which the authors show to be *Ostrea gryphoides*, Schlotheim.<sup>1</sup>

Apart from this interesting zoological conclusion Messrs. Bullen Newton and Smith throw grave doubts on the theory which holds that the Clive Street oyster bed had a natural, marine origin. They emphasize that the absence of marine conditions throughout the great extent of the alluvial structures on which Calcutta is built, as revealed by the Fort William boring, makes it seem apparent that the oyster

<sup>1</sup> R. Bullen Newton and Edgar A. Smith: "On the Survival of a Miocene Oyster in Recent Seas." *Rev. Geol. Surv. Ind.*, Vol. XLII, pp. 1-15 (1912).

bed does not form part of that series and cannot therefore be of any geological importance. Following a suggestion of the late Lt.-Col. H. H. Godwin-Austin, they believe that the most plausible explanation of the presence of the Clive Street oysters is that they were brought from the mud banks of the *Sundarbans* by river craft and deposited on the Clive Street site for lime burning, before the days when Calcutta began to be supplied with lime manufactured at the base of the Khasi Hills. According to Lt.-Col. Godwin-Austin such practices prevailed in Calcutta and were actually witnessed by himself. They certainly do so still on the more isolated parts of the Indian and Burmese coasts and it would not be surprising to know that the heaps of shells were of considerable extent, perhaps comparable with the great heaps of animal bones now collected at Indian ports for export to foreign countries, where their utility in the preparation of artificial fertilizers is better appreciated than it is in this country. If this explanation be correct any geological arguments based on the occurrence of the so-called oyster bank are worthless.

The third and latest occurrence of oyster shells in the vicinity of Clive Street was brought quite recently to the notice of Dr. W. A. K. Christie by Mr. J. H. de C. Ballardie, A.R.I.B.A., who has kindly presented three shells to the Geological Survey and forwarded the following report of the engineer in charge of the two excavations where the shells were found :—

Third Occurrence  
of Oysters near  
Clive Street.

“The oyster shells which were dug up from Swallow Lane and Allahabad Bank foundations were found within 1 foot 6 inches below the original soil, that is, about 5 feet 6 inches below the adjoining road level. The soil in which they were found is black and on closely examining it small shells about  $\frac{1}{4}$  to  $\frac{3}{8}$  of an inch in diameter and roots of small herbs could be traced. It is very peculiar that where sandy soil is found no trace of any class of shells or herbs could be found.”

It is to be regretted that the excavations had been filled in before the discovery came to the notice of the Geological Survey or it might have been possible to examine the section in place. It is to be observed, however, that Swallow Lane is only approximately 150 yards in a straight line from the nearest point in Clive Street where the earlier shells were obtained and that the depth of the horizon in each of the cases is much the same. The presence of small shells with the oysters is also noteworthy and the traces of herbs may have been the rootlets of terrestrial plants. It appears that this occurrence is part of the same shell band found before

and it is very remarkable that these large oyster shells have not been reported from any of the numerous excavations and bores made in Calcutta city and its neighbourhood within recent years. The shells themselves are of striking appearance and it is unlikely that they would be passed unnoticed. Small freshwater and estuarine gastropoda are often found below the present surface in Calcutta. *Telescopium fuscum* was met with in excavations near Presidency College and a few molluscs obtained lately by the writer, 3 feet below the level of Free School Street, were pronounced by Dr. Annandale to be identical with forms living in Calcutta tanks to-day. The last discovery, in the absence of further evidence, has left the problematical origin of the Clive Street oyster bed precisely where it was before and the reader must be left to judge for himself whether it is of marine origin or not.

The new examples consist of two separated valves forming one shell, the lower valve of which has the upper end of the ligamental area broken off, and of one practically complete lower valve. Both are adult specimens. The dimensions of the single lower valve compared with those of one of the earlier examples are given below.

	<i>Present specimen.</i>	<i>Earlier specimen.</i>
Lower Valve	{ height = 31 cm.	38 cm.
	{ length = 14.5 "	17 "
Height of hinge-area	= 15 "	14 "
Width " " "	= 8 "	7.6 "

I have compared the specimens with the figures of those described by Messrs. Bullen Newton and Smith, with other examples from Calcutta excavations, and with recent shells from the Mergui coast of Burma. Further, I have compared them with the fossil forms known as *Ostrea crassissima* from the Burmese Miocene and I agree with Messrs. Bullen Newton and Smith that *Ostrea gryphoides*, Schlotheim and *Ostrea crassissima*, Marcel de Serres, possess identical specific characters in every way and that the latter name should give place to the former. The specimens under description, barring the injuries received while they were being dug out of the soil, are in perfect preservation and have the ligamental area particularly well developed, the ridges and hollows of both valves showing the transverse lines of growth and the finer longitudinal striae. The recent specimens from the clear waters of the Bay of Bengal have very much smaller ligamental regions than those from the muddy waters of an estuarine environment and the Miocene forms approximate the latter in this respect. The large size, very numerous growth lamellae and the great thickness of lower valve, which attains 5.8 cms. through the ligamental furrow in one specimen, indicate

maturity. The heart-shaped muscular impression is 40 to 45 mm. across and being of a very pale buff colour stands out clearly from the white, nacreous interior of the valves. The upper, outer surface of one of the valves has evidently been attached at one time to some rough surface on which cirripedes of the genus *Balanus* were already growing. Later, the shell had broken free again carrying the remains of the barnacles with it. According to Dr. Annandale who has kindly examined the specimens, the species represented is probably *Balanus amphitrite*, Darwin, which ranges from the Miocene (Aquitanian) to the present time.

#### EXPLANATION OF PLATE.

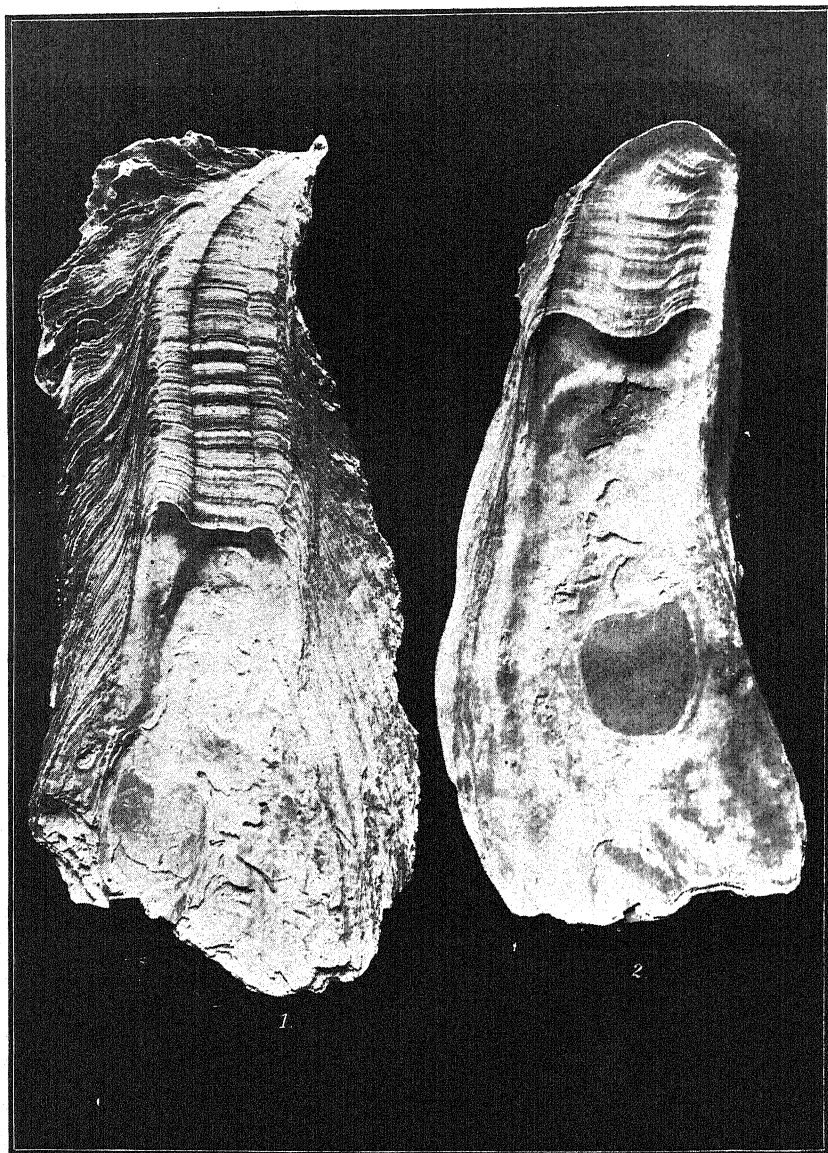
(The figures represent specimens delineated about two-thirds of the natural size.)

*Ostrea gryphoides*, Schlotheim.

Fig. 1. Adult example showing the internal characters of the lower valve.

Fig. 2. Another adult example showing the internal characters of the upper valve.

The specimens were obtained from an excavation in Swallow Lane, Calcutta and presented to the Geological Survey of India by Mr. J. H. de C. Ballardie (1923).



*Ostrea gryphoides*, Schlotheim.



9. On the Fossil Pectinidæ from Hathab, Bhavanagar State (Kathiawar).

By HEM CHANDRA DAS-GUPTA, M.A., F.G.S.

INTRODUCTION.

In two of my previous communications I have described the fish teeth<sup>1</sup> and a mammalian humerus<sup>2</sup> obtained from Hathab in the Bhavanagar State and the purpose of this short note is to record the description of a few species of *Chlamys* and *Amussium* obtained from the same locality. In his monograph dealing with the geology of Kathiawar<sup>3</sup>, Fedden mentioned the occurrence of the following species of *Pecten* in the upper Tertiary beds of Kathiawar:—

*Pecten cf. corneus*, Sow (op. cit., pp. 111, 117).

*Pecten bouei*, var. *a* d'Arch. (op. cit., pp. 119, 120, 121).

*Pecten farrei*? d'Arch. (op. cit., p. 119).

*Pecten farrei* d'Arch. (op. cit., pp. 120, 122).

*Pecten soomrowensis*, Sow (op. cit., p. 122).

*Pecten subcorneus*, d'Arch. and Haime (op. cit., p. 122).

While describing the geology of Navanagar Mr. Adye has mentioned the occurrence of weathered-out bivalve shells, chiefly of *Pecten* and *Cardium* and of *Pecten bouei*, *Pecten farrei* and *Pecten sp.* from the Gaj beds.<sup>4</sup> As far as I am aware no detailed description of the Kathiawar *Pecten* has been published and accordingly this short note has been prepared.

DESCRIPTION OF FOSSILS.

*Amussium hathabiensis*, n. sp.

(Plate XI, Figs. 1-4).

This fossil was described as *Pecten corneus*, Sow (?) by Fedden. According to Sowerby the valves are smooth with very fine concentric lines on the outer surface.<sup>5</sup> According to Nyst: "Sa surface extérieure paraît lisse; mais, examinée a une très-forte loupe, l'on aperçoit des stries concentriques très serrées, lesquelles sont traversées par d'autres longitudinales

<sup>1</sup> *Proc. Ind. Assoc. Cult. Sci.*, Vol. III, pp. 158-160 (1917).

<sup>2</sup> *P.A. S.B. (N.S.)*, Vol. XV, p. cxcix (1919).

<sup>3</sup> *Mem. Geol. Surv. Ind.*, Vol. XXI, pp. 73-136 (1885).

<sup>4</sup> *Economic Geology of Navanagar State*, pp. 129, 131.

<sup>5</sup> *Min. Conch.*, Vol. III, p. 1, pl. 204.

plus fines encore'.<sup>1</sup> Nyst's description makes it quite clear that the species is not a true *Pecten*. Sowerby also pointed out the affinity of this species with *P. pleuronectes* the type of the genus *Amussium*, but the absence of the internal ribs shows that it cannot be referred to that genus, while the published description shows that it is more allied to *Pseudamussium* than to any other genus as already mentioned by Stoliczka.<sup>2</sup> The Hathab specimens are entirely different. Fedden apparently depended upon d'Archiac and Haime for this identification, but these authors, evidently, were not sanguine regarding the identity of the Hala Range specimen with *Pecten corneus* chiefly on account of the fact that the valve is "composé de deux couches principales distinctes, l'une externe....l'autre interne ou sous-jacente, et présentant in système de stries rayonnantes nombreuses (80 à 90), droites, d'égale profondeur, mais inégalement espacées".<sup>3</sup> A cursory examination of the Hathab specimens shows that these characters do not appertain to them.

The valves are very thin, rounded and slightly inequilateral. The beak is acute with a straight hinge-line. The ears are nearly equal and those of the right valve form a small synclinal arch where they join the beak, while the ears of the left valve form a perfect straight border at the umbonal portion. The byssal notch is fairly prominent. The external surface is practically smooth excepting some very indistinct concentric lines of growth. In the interior of the valves there are usually 30 to 34 ribs all arranged in pairs. This number is fairly constant in shells of different sizes showing that in the younger specimens the ribs are much pressed together.

This species has some relationship with *A. cristatus* Bronn but a little consideration shows that Bronn's species is more swollen, has the external concentric markings more prominent and has, below the resilial pit, curved ridges the like of which is not found in the specimens from Hathab.<sup>4</sup> This species may also be compared with *Pecten (Pleuronectia) placunoides* Martin described from Java, but Martin's species has a larger number of internal ribs.<sup>5</sup> The number of ribs found with *P. corneus* (?) d'Arch and Haime is still greater, while its external surface is markedly concentrically striated. It has got a very close similarity with the living *Pecten (Amussium) pleuronectes* Linn.,<sup>6</sup> but in the latter the number of the internal ribs is smaller and the resilial pit is a little shallower. There are, however, many characters in which these two

<sup>1</sup> *Descript. d. coq. et d. Polyp. fossiles de Belg.*, p. 299.

<sup>2</sup> *Pal. Ind.*, Ser. VI, Vol. III, p. 426.

<sup>3</sup> *Descript. d'aném. foss. d. Num. de l'Inde* p. 269.

<sup>4</sup> Goldfuss, *Petref. Germ.*, p. 77, Tav. 99, figs. 13a-d.

<sup>5</sup> *Beitr. Z. Geol. Ost-Asiens und Austral.*, Vol. I, Tab. fig. 32.

<sup>6</sup> For a complete bibliography of this and other species of *Amussium*.

species agree remarkably and, though the difference in the number of the ribs shows a specific distinction, it is not improbable that *A. hathabiensis* is the fore-runner of *A. pleuronectes* Linn.

*Chlamys tauroperstriata*, Sacco *var. spinosa*, n. v.

(Plate XI. Figs 5-7).

The right valve is fairly well-preserved. It is higher than long, the height being 11 mm., while the length is 9 mm. The external surface is ornamented with some 30 radial ribs which are practically equidistant and of the same strength. The beak is not preserved. The anterior ear is provided with a few radial ribs which are traversed by fine and numerous curved lines giving rise to a markedly wrinkled aspect. The valve is moderately thick.

The left valve is higher than long, the height being 18 mm. and the length 15 mm. The external surface is marked with radial ribs which are about 30 in number, while one incompletely preserved left valve has a part of its outer layer preserved showing very small spinous or warty outgrowths on the ribs. The beak is rounded. The anterior ear is covered with a number of radial riblets and is tolerably large. The posterior ear is very small. The valve is moderately thick.

The two valves belong to two different individuals, but they agree so well with the two valves of *Chlamys tauroperstriata*, Sacco *var. persimplicula*, Sacco<sup>1</sup> that I have no hesitation in referring them to the same species. The Hathab species, however, differs from *var. persimplicula* by the presence of scabrous outgrowths on the ribs and accordingly a different varietal name has been proposed. This also resembles *P(Chlamys) Kokenianus*, Noetl.<sup>2</sup> but the number of ribs and the punctured interstices of the species from Burma clearly distinguish it from the species under consideration.

*Chlamys favrei*, d'Arch.

1850. *Pecten favrei*, d'Arch. — Hist. des progress de la Geol. Vol. III. p. 269.

1853 *Pecten favrei*, d'Arch. — Descrip. d. anim. foss. d. Num. d. l'Inde, p. 270. Pl. XXIV, fig. 5, a.

As noted already the existence of this species in Kathiawar was recorded by Fedden. I have very little to add to the

reference should be made to the work of Gregorio, published in the "Annales de Geologie et de Paleontologie" Livr. 23, pp. 15-64 (1898) and Livr. 24, pp. 5-6 (1899).

<sup>1</sup> *I. Moll. d. terr. terz. d. Piemonte*, Vol. XXIV, p. 8, Tav. I, figs. 27, 28.

<sup>2</sup> *Pal. Ind. N.S.* Vol. I, Art. 3, p. 117, with figures.

description given by d'Archiac and Haime. There are, in my possession, two left valves very likely referable to this species which show that the ears of the left valve were very small. Unfortunately the outer surface of the bigger anterior ear is so firmly closed by deposits that nothing can be made out regarding the nature of the auricular ornamentation. The number of the radial ribs is 26.

In his monograph dealing with the Miocene fossils of Burma<sup>1</sup> Dr. Noetling expressed the opinion that possibly *Pecten bouei*, *P. farrei* and *P. Hopkinsi*, described by d'Archiac and Haime, were specifically indistinguishable. There is considerable force in the statement that *P. farrei* and *P. Hopkinsi* are possibly identical, but *P. bouei* is undoubtedly quite distinct from them, as is shown clearly by its striae of growth traversing the radiating ribs and the ornamentation on the posterior ear of the right valve.

*Chlamys* sp. cf. *bouei*, d'Arch.

(Plate XI, Fig. 8).

1850. *Pecten bouei*, d'Arch.—Hist. des progres de la Geol., Vol. III, p. 269.

1853. *Pecten bouei*, d'Arch.—Descrip. d. anim. foss. d. Num. d. l'Inde, p. 269 Pl. XXIV, fig. 1, a, b.

Fedden has recorded the presence of *P. bouei* var. *a* d'Arch. and Haime in the Gaj beds of Kathiawar. In the Presidency College collection there is one right valve of small size which may be compared to this species, but which lacks the striae of growth crossing the radiating ribs of which there are 27 in the present specimen. The valve is slightly higher than long, the height being 18 mm. and the length 16 mm. The posterior ear, covered with very fine ribs, has its base prolonged against the margin of the valve in a manner recalling what prevails in *P. bouei* d'Arch.<sup>2</sup>

*Chlamys Middlemissi*, n. sp.

(Plate XI, Figs. 9-12).

The shell is higher than long and radially ribbed in both valves. The number of ribs varies from 16 to 24 and it appears that the ribs in the left valve are stronger than those of the right valve and the number of ribs in the left valve is correspondingly smaller. The right valve is somewhat flat, while the left one is convex. The radial ribs in both valves are traversed by fine and numerous squamæ. The anterior auricle of the right valve is traversed by a few radial ribs which are finely granulated; the posterior auricle of this valve

<sup>1</sup> Op cit., p. 119.

<sup>2</sup> Op cit., p. 269.

is much smaller than the other one and shows faint traces of radial plication. The ears of the left valve resemble those of the right valve.

This species may be compared with *Pecten cancellatus* Goldf.,<sup>1</sup> but there is a good deal of difference in the nature of the radiating ribs. In *Chlamys pusio* Linn<sup>2</sup> the squamose nature is rather irregular. It may also be compared with *Chlamys pallium* Linn<sup>3</sup> which has also been found as fossil by Martin from Java,<sup>4</sup> but the nature of the ribs which are tripartite in *C. pallium* distinguishes it from *C. Middlemissi*. *C. varia*, Linn,<sup>5</sup> which has also been described by Sacco<sup>6</sup> can be distinguished from the Hathab species as in the latter the scales are of an imbricated nature, while the squamæ of the former are more wartlike. It also resembles *P. obliquus*, J. de C. Sow<sup>7</sup> but *C. Middlemissi* is much smaller in size and lacks the riblets that are found between the contiguous strong ribs. *P. Soomrowensis* J. de C. Sow<sup>8</sup> is also comparable with this, in the possession of squamose ribs, but the ribs in *P. Soomrowensis* are tripartite and pentapartite.

#### EXPLANATION OF PLATE.

- |     |   |                                       |  |
|-----|---|---------------------------------------|--|
| 1.  | } | <i>Amussium hathabiensis</i> , n. sp. |  |
| 2.  |   |                                       |  |
| 3.  |   |                                       |  |
| 4.  |   |                                       |  |
| 5.  |   |                                       | <i>Ohlamys tauperstriata</i> , Sacco. var. <i>spinosa</i> , n.v. . . . Left valve. |
| 6.  |   |                                       | .. Right valve.  |
| 6a. |   |                                       | .. Ear magnified.  |
| 7.  |   |                                       | .. Left valve.   |
| 7a. |   |                                       | .. Surface ornamentation magnified.  |

<sup>1</sup> *Petref. Germ.*, p. 59 tav 94. fig. 5.

<sup>2</sup> Reeve : *Monograph of the genus Pecten*, pl. XXXIII, fig. 157

<sup>3</sup> Reeve : op. cit., pl. XVII, fig. 63.

<sup>4</sup> *Die Tertiarsch. auf. Java*, p. 124

<sup>5</sup> Reeve. op. cit., pl. XXV, fig. 102.

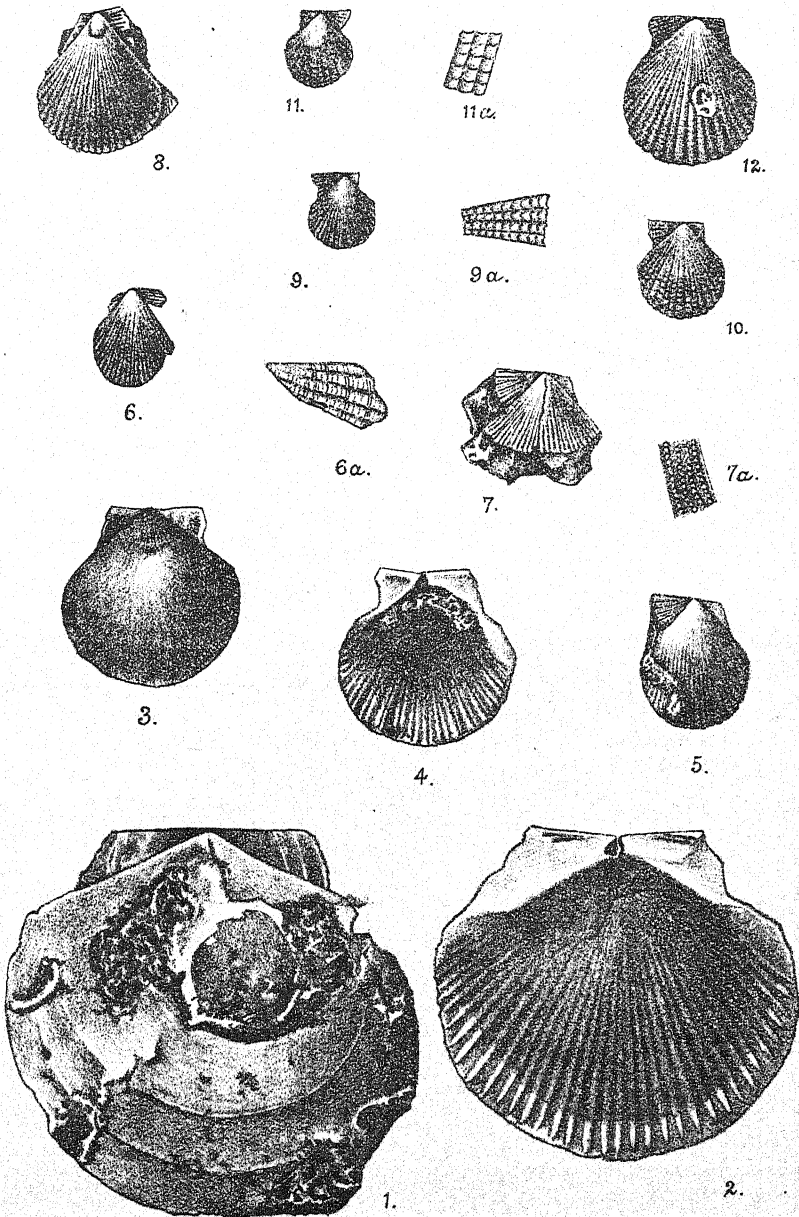
<sup>6</sup> Op cit., p. 2 tav. I, figs 1-7.

<sup>7</sup> *Trans. Geol. Soc. Lond.* 2nd Ser., Vol. V, p. XXV, fig. 15.

<sup>8</sup> *Ibid* pl. XXV, fig. 14.

8. *Chlamys* sp. cf. *Bouei*, d'Arch  
9. *Chlamys Middlemissi*, n sp.. Left valve.  
9a. " " .. Ear magnified.  
10. " " .. Left valve.  
11. " " .. Right valve.  
11a. " " .. Squamæ magnified.  
12. " " .. Left valve.

(The drawings are of natural size, unless otherwise indicated.)





## 10. On the Age of the Utatur Marine Transgression.<sup>1</sup>

By L. RAMA RAU, *Lecturer in Geology, Central College,  
Bangalore.*

The existence of a series of marine fossiliferous rocks of Cretaceous age in the eastern coast of the south of the Indian Peninsula has long been recognised, and detailed work has been done on the stratigraphy and palæontology of these rocks. Though covering a small area, yet from the abundance of well-preserved and characteristic fossils, the formation has always been considered of much importance and interest. From a study of the lithology as well as the structure and arrangement of these series, it is now universally recognised that these were deposited during a temporary transgression, on this coast, of the southern sea during the Cretaceous times.

There is a general agreement to divide the whole series into three broad divisions, each of which has been subdivided into many zones and bands, characterised by certain genera and species of fossils. The present paper concerns itself with only the lowermost of these divisions—the Utaturs—mainly with the view to determine the probable age of the marine transgression that gave rise to these rocks.

The Utaturs might be generally described as a series of marine deposits, mostly argillaceous in constitution, composed of sandstones and shales usually highly calcareous or gypsaceous. An interesting fact is, that in most cases, the lowermost sediments of this series rest on a limestone which judged from its organic structure is evidently a portion of an old coral reef, so that this member is usually known as the 'Coral reef limestone.' It is obvious that to get at a suggestion of the probable age of the marine transgression that gave rise to these rocks, it is essential that we should consider the stratigraphical and palæontological characteristics of the lowermost series of the Utaturs and see their relationship, if any, to other areas of similar deposits.

It is well known that the most characteristic types of animals throughout the Cretaceous deposits all over the world are the Ammonites—a group which by the very limited vertical but extensive geographical range of some of its genera and species is of unsurpassed stratigraphical value in classifying and correlating subdivisions of the Cretaceous strata. As in other places so also in India, there is a large abundance and

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<sup>1</sup> Communicated by Dr. J. Coggin Brown, O.B.E., D.Sc.

variety of Ammonites found throughout these deposits which have been figured and described in the *Pal. Indica* series.<sup>1</sup>

The relationships of the ammonite fauna of the Trichinopoly Cretaceous (a name given to the whole series of the coastal Cretaceous) to those of other areas both in Europe and elsewhere have been studied and discussed by Kossmat<sup>2</sup> at great length and after a detailed study of fossils from several areas he finds that "the fauna of southern India comprises the most important types of the two great areas (the Indo-Pacific and the Atlantic and thus serves as a connecting link between them." From a study of several fossils from both the areas he remarks: "The fauna of the Trichinopoly Cretaceous have remarkable affinities to the European fauna, especially if we have regard not only to identical but also to closely allied forms," and he has actually shown the probable route by which "a free interchange of fauna between Europe and the South of India" was possible.

The basal members of the lower Utaturs are a series of silts and shales containing numerous fossils, particularly the Ammonites. The general aspect of the cephalopod fauna of the Utaturs according to H. F. Blanford<sup>3</sup> "recalls the Gault of Europe" and he assigned to the Utaturs "a position midway in the Cretaceous—about Gault and Greensand." The most abundant as well as the most characteristic Ammonite of the lowermost Utaturs is *Ammonites inflatus*, Sow., a species remarkable in having a very wide geographical range, identical forms being found in several widely separated areas, including Central Europe. As Stolickza<sup>4</sup> has observed the species *Ammonites inflatus* is "well-known as one of the most characteristic species of the Gault in almost all the European provinces" and in England it occurs in the Gault and Greensand, as also in the Albion of France. More recent studies of the Cretaceous deposits and their Ammonites have shown that *Ammonites inflatus*, identical in character with the Indian forms, was quite abundant even in the Lower and Middle Gault of England<sup>5</sup> and there is good reason to believe that the form had come into existence even during the times of the Lower Greensand. Messrs. Kitchin and Pringle, in their study of the Gault deposits of England find *Ammonites inflatus* as the most dominant Ammonite in the lower zones of the upper

<sup>1</sup> *Pal. Indica*, Vol. I, Series III.

<sup>2</sup> *R.G.S.I.*, Vol. 28, pt. 2—Kossmat: On the importance of the Cretaceous rocks of S. India in estimating the geographical conditions during later cretaceous times.

<sup>3</sup> *M.G.S.I.*, Vol. IV, Blanford: On the Cretaceous Rocks of Trichinopoly District.

<sup>4</sup> *Pal. Indica*, Vol. I, Series III.

<sup>5</sup> *Q.J.G.S.*, Vol. LXXVIII. No. 309—Lamplugh: On the junction of the Gault and Lower Greensand near Leighton Buzzard.

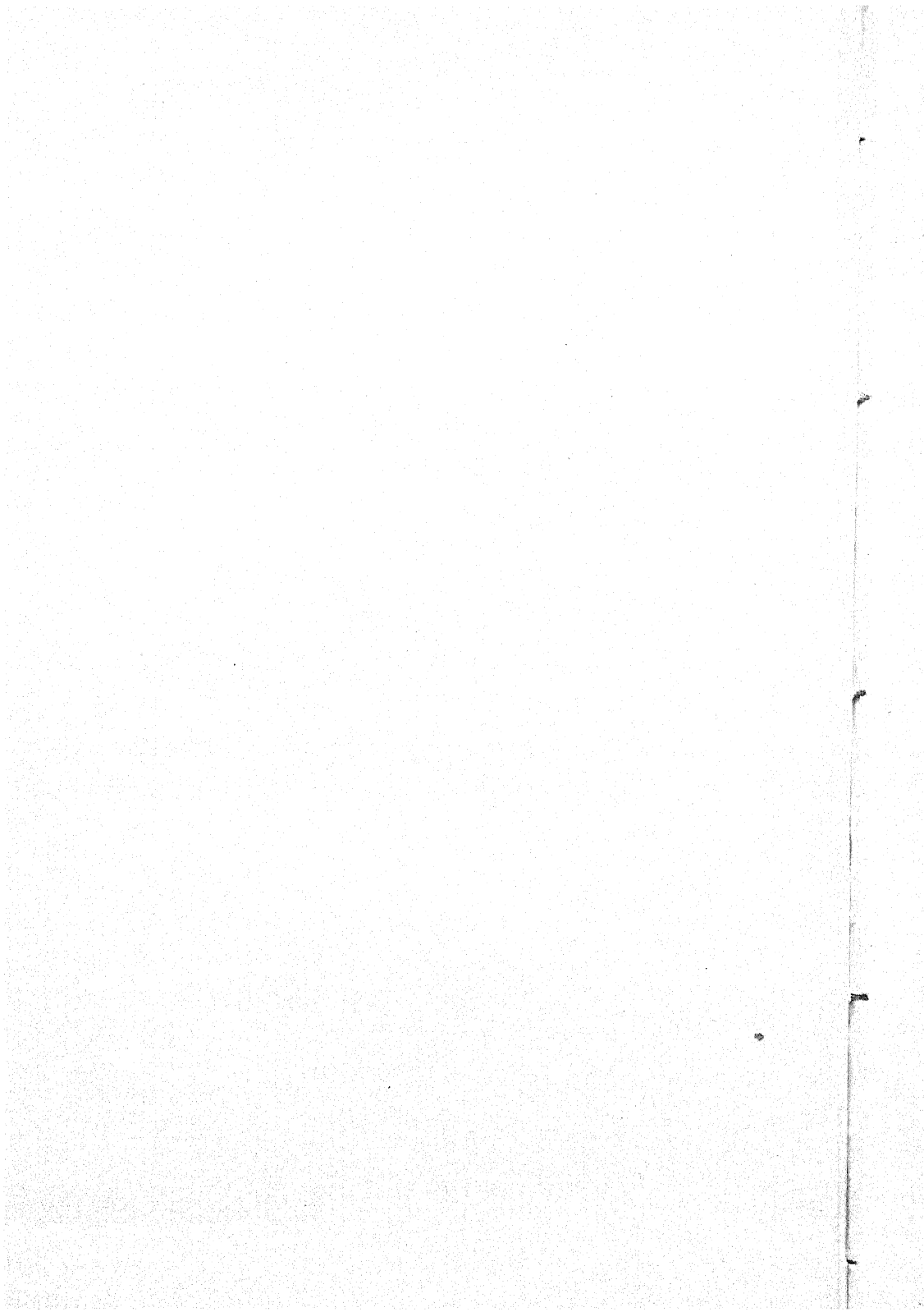
Gault. We might, therefore take it that this species had attained a great abundance and is one of the most characteristic fossils of the middle and upper Gault in England corresponding to half-way in the Albian period in Europe. The lowermost sediments of the Utaturs with the abundance of this characteristic species, *Ammonites inflatus*, cannot, therefore, be far different from this age and it would be quite reasonable to assign to them an age approximately corresponding to the Middle Albian in Europe.

If, therefore, the Utaturs which are always found along the western margin of the whole Trichinopoly coastal Cretaceous series are themselves Middle Albian in age, we find that the actual beginnings of the encroachment of the sea on land or of the marine transgression must have been much earlier. If, further, we consider, as is usually done, the coral-reef limestone underneath the Utaturs as continuous with this series, then we have to shift the age of the transgression still backward to allow time for the growth of all the extensive coral reefs, whose denuded remains alone we see at the present day. Thus we find that if we have to name the transgression after the period in which it commenced, the term "Cenomanian transgression" now generally employed for this encroachment of the sea in South India during Cretaceous times does not faithfully represent it in point of time and has to be modified so as to accord with an older age.

Though it is usual to believe that the Cenomanian period was one of intense earth movements and consequent marine transgression over several areas, the detailed study of these deposits in more recent years in several places tends to show that the transgression in most cases took place in much earlier times. A recent paper<sup>1</sup> by Messrs. Kitchin and Pringle "on the overlap of the upper Gault in England and on the Red Chalk of the Eastern Counties" tends to show "that one of the most marked period of the transgressive movement was at the commencement of the upper Gault times" The recent investigations by Dr. L. F. Spath and Prof. J. W. Gregory<sup>2</sup> of the Cretaceous deposits of South Africa and their *Ammonites* led them to a similar conclusion that "a submergence of some extent took place before the widely recognised Cenomanian transgression." The evidence of the coastal Cretaceous deposits of Southern India also lends additional support to the now growing belief "that the so-called Cenomanian transgression commenced long before Cenomanian times."

<sup>1</sup> *Geo. Mag.*, London, April-May, 1922.

<sup>2</sup> *Nature*, 26th August, 1922.



## II. A Preliminary Note on the Ecology of Part of the Riverine Tract of Burma.

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and LESLIE LORD, *B.A., I.A.S.*

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### I. INTRODUCTION.

The area dealt with in the present note extends roughly from the town of Prome (latitude  $18^{\circ}50'N.$ ) 120 miles northwards as far as Yenangyaung, and embraces a strip of country on either side of the River Irrawaddy, in all an area of about 4,000 square miles. In the course of this investigation the authors have covered more than 1,200 miles on foot, but even then parts of the area have, of necessity, been left unvisited.

The botany of Lower Burma has been studied—especially as regards the trees—by Kurz<sup>1</sup> and of recent years the economic aspects of the forests of Burma have received much attention from the officers of the Indian Forest Service. Apart from the great pioneer work of Theobald<sup>2</sup>, the geology of Burma did not even commence to be studied in detail until long after Kurz had completed his studies on the Forest Floras. Consequently any work on the inter-relationships between the geology, the soils and the distribution of vegetation could scarcely be attempted until recently. Even now, the greater part of the detailed geological mapping on which the present paper is based is still unpublished.<sup>3</sup> The authors are much indebted to the Indo-Burma Petroleum Co. Ltd., for permission to incorporate this unpublished geological work.

Apart from the works of Kurz and the little handbooks

<sup>1</sup> S. Kurz, *Forest Flora of British Burma*; Superintendent, Government Printing, Calcutta, 1877.

<sup>2</sup> W. Theobald, A Sketch of the Geology of Pegu; *Mem. Geol. Surv. India*, Vol. X, pt. 2, 1873.

<sup>3</sup> For references and a recent summary see L. Dudley Stamp, An Outline of the Tertiary Geology of Burma; *Geol. Mag.* Vol. LVIII. Nov. 1922.

issued by the Forest Service<sup>1</sup>, almost the only botanical study is a paper on the Flora of the Minbu District by Colonel Gage, I.M.S.<sup>2</sup> The numerous references to the vegetation of Burma which appear in standards works both on Ecology—such as Schimper's monumental "*Pflanzengeographie*"—and on Botany—such as Brandis' "*Indian Trees*"—are largely derived from Kurz' earlier studies.

The present note is, therefore, an attempt to classify the natural vegetation of a part of Burma and to analyse its connexion with the controlling factors of climate and soil.

## II. THE ECOLOGICAL FACTORS.

It is unnecessary to remind the reader that Burma is essentially a monsoon country but that the area under consideration is profoundly affected by the general topography of the country. The rain-bearing south-westerly monsoon-winds are intercepted by the lofty and uninterrupted range of the Arakan Yoma which separates the central tract of Burma from the sea. The result is that the centre of Burma is occupied by the "Dry Belt" with a rainfall as low as 21 inches in the middle (Salē). In the area under consideration the rainfall decreases steadily from 47.25 inches at Prome along the riverine stations to 25.52 inches at Yenangyaung. Westward from the River Irrawaddy there is a rapid increase as one approaches the foot-hills of the Arakan Yoma. Eastwards there is also a slight increase towards the Pegu Yoma (compare Minhla, 32.85 inches and Taungdwingyi, 40.34 inches). The low ranges of hills which border the Irrawaddy from Prome to Minbu enjoy a slightly higher rainfall than the neighbouring lowlands, especially from thunderstorms at the commencement and towards the end of the monsoons. In the drier regions, the rain falls mainly on a few days of the "rainy season" and owing to the hardened, baked surface of the soil by far the greater portion runs off and is lost so far as the soil and the vegetation is concerned. There is thus a greater contrast between the Teak-Forests of Prome and the Semi-Desert of Yenangyaung than the mere difference in rainfall would suggest.

Heat would not seem to be a very important factor in the present area. The extremes both diurnal and annual are greater in the drier regions. At Minbu, the only station in this area for which complete records exist, the monthly mean varies from 71.1° in January to 90.2° in April. In 1921 the

<sup>1</sup> A. Rodger, *A Handbook of the Forest Products of Burma* (1922); J. H. Lace, *A List of Trees, Shrubs, etc. recorded from Burma* (1912); C. B. Smales, *A Simple Key to One Hundred Common Trees of Burma* (1922); Government Press, Rangoon.

<sup>2</sup> *Records Botanical Survey of India*, Vol. III, (1904).

*Instructions for Binding.*

Insert the following Errata after page 42 of *Journ. Proc. As. Soc. Bengal* (n.s.) XIX, 1923, No. 1.

## ERRATA.

### 2. On the Anatomy and Bionomics of the Red Cotton Bug, *Dysdercus cingulatus* (Fabr.).

By HEM SINGH, M.Sc. (Punjab), Assistant Professor of Entomology, Punjab Agricultural College, Lyallpur.

Page	Line	Instead of	Read
18	41 from top.	CLY. Figs. 8e, 8f.	CLY.F. Figs. 8e, 8f.
19	9	gulae	gula
"	19	maxilla	maxillae
"	para-graph 4.		'gula' and the pronouns and verbs for it in the singular, not in the plural.
20	37	(Fig. 61)	(Fig. 6b)
22	20	pleuron	pleura.
"	24	pleuron	propleuron
"	42,43	the scuto scutellum	this
"	44	SL	SL <sup>2</sup>
23	33	post scutellum	scutellum
"	35	coridae	coreidae
24	2	are long and of considerable strength consisting of the coxa....	are long, of considerable strength, and consist of the coxa (Fig. 5c)....
"	32	being	and is
28	18	chitinous	chitin-lined
29	7	rows	row
"	37	a rectum	the rectum
30	3	(S.D.)	(S.D., Fig. 13)
"	4	(A.S.D., Figs. 9 & 13)	(A.S.D., Fig. 9)
"	23		<del>delete</del> —chitinous and
"	38,39	The latter supports below the afferent duct and above the pharyngeal duct....	The latter besides the efferent duct also supports the pharyngeal duct...
31	2	latter	former
"	5	and in	. In..
"	10	anterior	interior
"	24	'v' of the	V-shaped

Page	Line	Instead of	Read
33	46	being small and giving one....	is small and gives one....
34	1	and four small....	and to four pairs of small....
36	1	with	and shows
„	24		<i>Delete the words:</i> on the mesothorax
„	25	patches on	patches can be made out on

Plate	Figure	Instead of	Read
II	2	A <sup>7</sup> , A <sup>8</sup>	A <sup>8</sup> , A <sup>9</sup>
„	3a	A <sup>2</sup> —A <sup>9</sup>	A <sup>8</sup> —A <sup>10</sup>
„	„	OC	OE
„	4a	A <sup>1</sup> —A <sup>3</sup>	A <sup>2</sup> —A <sup>9</sup>
„	„	Eps. <sup>2</sup>	Eps. <sup>8</sup> (near Epm <sup>8</sup> .)
III	6c		Arrows of MX & MN should reach the internal & external stylets respectively
IV	8e	P.G.	P.C.
V	10a & 10b	A <sup>6</sup> —A <sup>9</sup>	A <sup>7</sup> —A <sup>10</sup>
„	10c	(inc) ?	inf
„	11a, 11b & 11c	A <sup>6</sup> —A <sup>8</sup>	A <sup>7</sup> —A <sup>9</sup> . (The sclerite labelled A <sup>9</sup> already is done so correctly.)

extreme temperatures recorded in January were 48.9° and 89.7°, the corresponding figures in April being 70.9 and 109.5°.

Variation in the amount of direct sunshine plays a not unimportant part in controlling the minor changes in the vegetation. The hill-ranges run roughly from NNW. to SSE. and, being formed of steeply-dipping rocks, their slopes often reach 30° or more. Consequently the western flanks are illuminated by direct sunshine for several hours less per day and the vegetation on these slopes is often distinctly richer and more hygrophilous. Sunlight often only penetrates into the deeper *chaungs* in these hills for a few hours per day.

In the cold season low lying tracts of clay are often subjected to thick morning mists, which may not clear away until 9.30 a.m. The dew-fall in the same season is very heavy and these two factors seem to control to a large extent the period of leaf-fall.

For the purposes of this study the geological formations present may be tabulated as follows:—

‘DRIFT’ FORMATIONS (POST-TERTIARY).

Alluvium of the River Irrawaddy.  
*Chaung*<sup>1</sup> Alluvium and Hill-wash.  
Plateau Gravel.

‘SOLID’ FORMATIONS (TERTIARY).

Irrawadian System (Mio-Pliocene)—mainly coarse, incoherent sands, usually slightly ferruginous, with bands of coarse, ferruginous conglomerate especially near the base. Locally there are bands of pale grey or mottled red and grey plastic clays.

Pegu System (Oligo-Miocene):—

*Upper Group*—alternating beds of rather fine-grained sands, locally hardened into resistant sandstones, and sandy or shaley clays. This group includes the exposed Pegu rocks of the Oilfields of Yenangyaung, and Minbu; and the Prome Beds, Kama Clay, Pyalo and Akauktaung Beds of Lower Burma.

*Middle clay-group*—a thick mass of indistinctly bedded rubbly shales or stiff clay, non-sandy. This group includes the Sitsayan shales.

*Lower Group*—at or near the base of the Pegu System, especially from Thayetmyo northwards there is a group of alternating sandstones and shales resembling the Upper Group, except

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<sup>1</sup> *Chaung* (Burmese), stream or stream course.

that the shales are *frequently* more rubbly and non-sandy.

The Irrawadian rocks—which attain a thickness of at least 5,000 feet—are usually but slightly folded and give rise to plateaux or undulating tracts of soft sands. The lower-lying parts are extensively covered with alluvium. The hard beds of the Lower and Upper Groups of the Pegu give rise to lines of hills and the rocks are often highly folded. The shales of the Middle Group give rise to extensive low-lying or gently undulating tracts—frequently the most infertile in Burma. The Pegu System reaches an enormous thickness, not less than 12,000 feet.

The normal Irrawadian sands yield a very light soil—practically a pure sand but on level plateau-surfaces there is a marked concentration of the iron salts near the surface and a hard ‘pan’ or cake is formed. Slope and drainage are thus of prime importance. The sandy groups of the Pegu yield loamy soils which, not unnaturally, vary greatly from place to place. Those of the higher group often suffer from an excessive amount of gypsum, whilst those of the lower group approach more closely the soils of the middle group. Provided the rainfall is not less than 36 inches the middle shales weather into a stiff blue clay. When, however, the rainfall falls below about 36 inches a type of weathering sets in which produces a soil known to the Burmans as “Hput-chi-mye” or “Kyatti-mye.” There is a tremendous concentration of alkaline salts, especially of sodium carbonate, in the surface layers and only the most alkali-resisting plants can possibly grow. The alluvium of the River Irrawaddy furnishes the usual Burma paddy soil—a heavy loam. *Chaung* alluvium and Hill wash partake of the nature of the rocks from which they are derived, with a marked amelioration of the salient features of the latter.

### III. GENERAL REMARKS ON THE VEGETATION AND EDAPHIC CONTROL.

The climate of Burma is essentially a woodland climate. Apart from the sandbanks and some of the recent alluvium, which are covered with the well-known “Kaing” or “Elephant” grass there are no areas of true grassland in Central Burma. Even then the Kaing Grassland must be regarded as a seral or non-climax community,—i.e. it has not reached the final condition which it would normally attain under the existing climatic conditions.

Schimper has stated that tropical woodland formations are of four main types:—Rain Forest, Monsoon Forest, Savannah Forest, and Thorn Forest. This simple grouping

is well exemplified in Burma. In the region studied, which lies entirely outside the wetter areas in which the Rain Forests occur, there is every gradation from Monsoon Forest (especially the Teak Forests and Indaing) through Savannah Forest to Thorn Forest, Thorn Scrub and Semi-Desert. Everywhere the principal undergrowth is grass, proving that the climate is not hostile to its growth, though slightly more favourable to tree-growth.

When working in any one area one is tempted to say that the soil, and almost the soil alone, is the determining factor in the distribution of vegetation. There are many places in which may be found within a stone's throw of one another typical Monsoon Forest of Eng and Ingyin; Savannah Forest of *Tectona hamiltonii* and *Terminalia oliveri*; thorn forest of *Acacia catechu* and thorn-scrub of *Acacia catechu* or *Zizyphus jujuba*, so powerful is the edaphic factor. It is when one studies the region as a whole that one realizes that the climate, especially the rainfall is really the main determining factor.

If one considers the vegetation firstly from the standpoint of the soils—that is really on the basis afforded by a study of the geology, the following points may be noted.

In the south—near Prome—the Irrawadian sands and gravels are covered by Teak Forest and *Pentacme*—*Dipterocarpus* Forest (Indaing). Both require a well drained soil, but the Indaing flourishes on extremely light soils—really pure sands. To be seen to perfection Teak requires a rainfall higher than that of Prome (47·25 inches) and the Teak forests near Thayetmyo and Allanmyo are “stunted,” the trees having a girth of less than 5 feet at a height of 5 feet from the ground. Teak is scarcely seen north of Thayetmyo (37·34 inches) but the Indaing stretches somewhat farther north and then passes into a mixed forest described hereafter as the *Diospyros* Forest. Passing further northwards on the Irrawadian this type passes gradually into the *Acacia catechu*—*Tectona hamiltonii* Forest. This in turn gives place to the *Acacia catechu* Thorn scrub, which is the characteristic vegetation of the Irrawadian near Yenangyaung (25·52 inches). It may be noted in passing that bands of clay in the Irrawadian may cause local changes whilst level plateau surfaces are often covered with a hard ferruginous layer which only supports a stunted Thorn—Forest or Thorn scrub.

The stiff, unbedded Pegu clays are, on the whole, decidedly unfavourable to vegetation. A Bamboo—*Acacia* Savannah Forest seems to be characteristic from just north of Prome to Thayetmyo and then to the north-west there are large areas of *Tectona hamiltonii*—*Terminalia oliveri* Forest. Wherever drainage is bad—especially on level plateau surfaces—this gives place to the *Acacia catechu* Thorn Forest. As soon as

the rainfall falls below 36 inches the "Kyatti-mye" type of soil develops and the Thorn Forest passes to the *Acacia catechu* Thorn scrub. This covers large areas from Thayetmyo to Minhla. On the clays of the Minbu and Yenangyaung anticlines it is replaced by the *Euphorbia* semi-desert.

Much of the chaung-alluvium and hill-wash is cultivated, but where level tracts have been left they become covered with *Zizyphus* Thorn scrub, relieved near *chaungs* by the *Combretum* hedgerow assemblage.

The alluvial sandbanks are the home of the Kaing grass, but the grassland must be regarded entirely as a seral or non-climax community. In time trees will appear and the land will become covered with forest.

The important points to notice are that entirely different types of vegetation occur on different soils under the same climatic conditions whereas the same type of vegetation (e.g. *Acacia* Thorn scrub) occurs on entirely different soils under different climate conditions. In short climate and soil in Central Burma to a considerable extent counteract one another.

#### IV. DESCRIPTION OF THE PLANT FORMATIONS.<sup>1</sup>

##### MONSOON FORESTS.

1. *Tectona grandis* Forest (Teak Forest). *Tectona grandis* hylon. Teak locally forms pure forests and thrives on a light, well-drained soil. Where the soil is somewhat heavy, the presence of lime is very beneficial. The stunted Teak-Forests studied by the writers near Allanmyo and Thayetmyo are more mixed and alternate with patches of Indaing. The undergrowth is mainly grass, of the species *Andropogum contortus* Linn., and *A. serratus* Thumb. The undergrowth tends to be richer on clayey patches, the Teak Forests being found exclusively on Irrawadian Beds in the area studied.

2. *Pentacme* and *Dipterocarpus* Forests (Ingyin Forest and Eng Forest or Indaing). *Pentacme-Dipterocarpus* hylon. The most abundant trees in these forests are Eng (*Dipterocarpus tuberculatus* Roxb.) and Ingyin (*Pentacme snavis* A. DC). They may occur separately (as 'consociations') or together (associations). Other common trees are *Terminalia tomentosa* W. et A. (Taukkyan) *Xylia dolabriformis* Benth. (Pyinkado), *Shorea obtusa* Wall. (Thitya) *Aporosa macrophylla* Muell. (Ingyin) and *Diospyros birmanica* Kurz (Tè). The principal, sometimes the only undergrowth of the Indaing is grass—*Andropogum contortus* Linn. or *A. apicus* Trin. in the north and *Pollinia articulata* Trin. in the damper regions of the south (e.g. north-east of Prome). On certain areas of clay the trees become

<sup>1</sup> Using the nomenclature proposed by F. E. Clements, Plant Succession, *Carnegie Inst.*, Washington, 1916.

widely separated and the forest becomes almost a savannah. The Indaing covers huge areas of Irrawadian sands as far north as 20°5', provided the drainage is sufficiently good. Whilst the forest flourishes on a ferruginous sand its growth is prevented by a hard surface layer of laterite or "iron-pan."

#### SAVANNAH FORESTS.

3. *Diospyros* Forest. *Diospyros birmanica* hylion. With decreasing rainfall the Indaing grades into a type of forest which consists of roughly equal proportions of *Diospyros birmanica* Kurz (Tè), *Terminalia tomentosa* W. et A., and *Pentacme suavis* A. DC. Still further north the last mentioned becomes scarce and its place is taken by such trees as *Tectona hamiltonii* Wall. (Dahat), *Dalbergia paniculata* Roxb. (Tapauk) and *Acacia catechu* Willd. (Sha). The undergrowth is again almost entirely grass—*Andropogum contortus* Linn., *A. apicus* Trin. and *A. serratus* Thunb.—which tend to grow gregariously. This type of forest occurs mainly on the Irrawadian, spreading also on to the sandier beds of the Pegu system. Poorly drained plateau portions are covered with a stunted forest or even a scrub especially of *Dalbergia paniculata*, *Pterospermum semisagittatum* Ham., or *Acacia catechu* Willd.

4. *Vitex-Heterophragma* Forest. *Vitex-Heterophragma* hylion. It is difficult to find a name for the very mixed forest which clothes the steep-sided ranges of hills of Pegu sandstones. The spurs of the hills are often covered largely by bamboo (*Dendrocalamus strictus*) whilst the trees in the *chaungs* and gorges grow tall and straight to considerable heights. Among the more characteristic trees may be noted *Vitex* cf. *limoniifolia*, *Heterophragma adenophyllum* Seem. (Petthan), *Sterculia colorata* Roxb. var. *fulgens*, *Dolichandrone stipulata* Benth. (Mahlwa), *Odina wodier* Roxb. (Nabè), *Bombax insigne* Wall. (Didu, conspicuous though not numerically abundant) and *Acacia leucophloea* Willd. var. *microcephala* Graham. The grassy undergrowth is more varied and often luxuriant, but *Andropogum apicus* Trin. is the most abundant species.

5. *Tectona hamiltonii*-*Terminalia oliveri* Forest (Dahat-Thau Forest). *Tectona* h.—*Terminalia* o. hylion. This type of forest covers considerable areas of the damper portions of the Pegu clays and has been studied from Pagangan (latitude 20°44') south-eastwards towards Thayetmyo. Growing as it does under the same climatic conditions as the Indaing, it is a splendid example of a stunted forest produced by a physiologically dry soil. *Tectona hamiltonii* Wall. (Dahat) in these forests usually branches near the ground whilst *Terminalia oliveri* Brandis (Than) produces straggling ill-formed trees. The grassy undergrowth consists mainly of a poor growth of

*Andropogum apicus*. The poorly drained areas in these forests are covered with the Sha-Dahat Thorn Forest.

#### THORN FORESTS.

6. *Acacia catechu*-*Tectona hamiltonii* Forest (Sha Dahat Forest). *Acacia-Tectona hamiltonii* hylon (or dryon). With the exception of *Tectona hamiltonii*—which occurs mainly as small bushy trees—nearly all the common plants in this forest are armed with spines or prickles. The most important are *Acacia catechu*, *A. leucophloea* Willd., *A. pennata* Willd., *Limonia acidissima* Linn. and *Harrisonia bennettii* Hook. f. Woody lianes and prickly climbers are abundant; grass of the species *Andropogum contortus* and *A. apicus* is the principal undergrowth. Abundance of bamboo produces a modification of this forest as on the Pegu clays west of Thavetmyo.

#### THORN SCRUB.

7. *Acacia catechu* Thorn Scrub (Sha Jungle). *Acacia catechu* dryon. Where the rainfall is less than 35 inches, the Pegu clays weather into the very infertile "Kyattimye." These lands, together with the gypsiferous Pegu loams further north and the Irrawadian sands with a rainfall centering round 25 inches (Yenangyaung) are covered with a sparse scrub, of which *Acacia catechu* (as bushes 4-6 feet high) is the characteristic plant. The intervening ground is covered with grass of the species *Aristida adscensionis* Linn., *Eragrostis major* Host., *Andropogum contortus* Linn., and *Cynodon dactylon* Pers. Bare patches are frequent and colonies (societies) of such stunted bushes as *Tectona hamiltonii*, *Milusa retulina* Hook. f. et Thoms., *Jatropha gossypifolia* Linn., and *Limonia acidissima* occur.

8. *Zizyphus jujuba* Thorn scrub. *Zizyphus jujuba* conso-cies (or dryon). This type of vegetation develops with extraordinary persistence on poorly drained alluvial tracts and especially on land which has been cultivated and then allowed to lie fallow for several years. *Zizyphus jujuba* as a prickly shrub or small tree is the characteristic plant, associated in the south with bamboo and in the north with *Jatropha*, spp., *Ricinus communis* Linn. (Wild Castor) and *Capparis* spp. In damper situations *Loeagerstræmia villosa* Wall. (Saung-balwe) is very common. In the more southern regions numerous climbers assist in making a dense, impenetrable and very thorny thicket.

9. *Euphorbia* Semi-Desert or Thorn-scrub. *Euphorbia* eremion. This type of vegetation, which is characterized by fleshy, thorny species of *Euphorbia* is found on tracts of Pegu rocks in the heart of the Dry Zone as at Minbu and Yenangyaung. Other common plants are *Acacia catechu*, *Jatropha gossypifolia*, *Limonia acidissima* and *Osyris arborea* Wall. The

bushes are often many yards apart, the intervening ground may be almost bare or covered with short grass, especially *Aristida adscensionis*. The other succulent plants which one associates with the Dry Zone of Burma (*Opuntia* sp and the Prickly Pear) are largely planted, especially as hedgerow plants.

#### UNCLASSIFIED FORMATIONS.

10. *Combretum* Hedgerow Community. There are various plants which are widely spread in hedgerows and which tend to reappear also by the banks of streams. *Combretum apetalum* Wall (Nabu) is especially typical.

11. *Riverside and Village Parkland*. The neighbourhood of villages is usually marked by large stately trees of such species as *Tamarindus indicus* Linn. (Magyi), *Bombax malabaricum* DC. (Letpan), *Borassus flabellifer* Linn. (Tan or Toddy Palm), *Ficus religiosa* Linn., and, in damper places, *Cocos nucifera* Linn. (Coconut Palm). When the intervening ground is covered with short turf—as frequently happens on stretches of Irrawadian—the effect is very pleasing and parklike. Whilst scarcely a type of natural vegetation, the selective human control which, in course of centuries, has produced it, is largely sub-conscious.

12. *Kaing Grassland*. The traveller up the Irrawaddy River is usually struck by the sometimes extensive sandbanks covered with the tall (8 to 10 feet) feathery Kaing or Elephant Grass (*Saccharum spontaneum* Linn.). Those sandbanks which are just covered during the high water season and which receive a deposit of fine silt, are very fertile and much cultivated, but where the Kaing Grassland is rarely covered and is left untouched trees soon develop.

13. *Swamps*. True swamps are rare in this part of Burma but small areas characterized by *Nymphaea* or by *Bedabin* may be observed.

#### V. THE CONNEXION BETWEEN AGRICULTURE, FORESTRY AND ECOLOGY.

Just as the distribution of natural vegetation is largely controlled by the soil, so is that of the crops. Despite the backward agricultural development of the country, this is apparent from the official crop-returns and is, of course, a matter of everyday knowledge to the Burman cultivator. If one takes a "charge" situated wholly on Irrawadian (eg. No. 16 of the Thayetmyo District) one finds that only 7.9% of the area is cultivated, that sesamum is the principal crop, (69%) followed by ground-nuts 19%. Another charge (No. 18 of the Thayetmyo District) situated wholly on Pegu Rocks shows that only 7.2% of the area is cultivated—there is much

of the infertile Kyattimye—and sesamum is again the principal crop (76%) but the return for ground-nuts is *nil*. The presence of a town is at once apparent in such returns as there is a marked increase in the percentage of cultivated land. Land which would in out of the way places be considered too difficult or infertile to work is, near towns, heavily manured and made to grow various crops.

Turning to forestry, at the present time Teak is almost the only timber which it pays to extract. In the future when more of the vast wealth of Burma's forests will be tapped great attention must be paid whether consciously or unconsciously, to the ecology. One point only may be noted now. Certain areas would repay a little attention such as slight drainage control whereas others which appear at first sight equally promising are in reality far from being so. It is, for example, doubtful whether good timber will ever be produced from the areas of stiff Pegu clays on which the Dahat-Than Forest now grows.

#### VI. CONCLUSION.

The authors hope that the full results of their investigations, with maps showing the inter-relationships between the geology and vegetation, will be published at a later date in the *Journal of Ecology* or elsewhere.<sup>1</sup> In the meantime they would be grateful for any suggestions or information which may help to extend the usefulness of these notes

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<sup>1</sup> Since this was written the detailed account has appeared. Stamp and Lord, *The Ecology of Part of the Riverine Tract of Burma*, *Journal of Ecology*, Vol. XI, No. 2. Sept. 1923, pp. 129-159.

## 12. Fish Recent and Fossil.

### A REVIEW OF SOME RECENT AMERICAN WORK.

- A Bibliography of Fishes.* By Bashford Dean and others. Three volumes (Vol. I, pp. 1-718, by Dean and Eastman, 1916; Vol. II, pp. 1-702, by Dean and Eastman, 1917; Vol. III, pp. 1-707, by Dean, Gudger and Henn: New York) published by the American Museum of Natural History in the "Science Education Series."
- The Genera of Fishes.* By David Starr Jordan. Four parts (pt. I, pp. 1-161, by Jordan and Evermann, 1917; pt. II, pp. 163-284, 1919; pt. III, pp. 285-410, 1919; pt. IV, pp. 415-576, 1920 by Jordan: California) published by Leland Stanford Junior University, California in the "University Series"
- A Classification of Fishes including Families and Genera as far as known.* By David Starr Jordan. Stanford University Publications, "University Series," *Biological Sciences*, III, No. 2, pp. 79-243 (1923).

Zoologists at the present day are almost in the position of the blind workers engaged in building a termite mound. Each constructs his little pellet of information and places it somewhere, without exactly knowing its relation to other pellets but with a subconscious feeling that he is doing the right thing, and possibly even with a vague instinct that his work is helping on some great enterprise. The wealth of material is boundless, the number of workers almost innumerable, and no one worker knows what his neighbour is doing. To raise us from this somewhat hopeless intellectual limbo we need physicians and teachers who will open our eyes and instruct us what to see. For the training of the physician and teacher patience is necessary. He must study not only Nature as she exists but Nature as she appears through the countless facets of the eyes of Scarabee. To drop all metaphor, we need men (or women) who are willing and able to abstract and codify existing information.

In this respect ichthyologists are now perhaps happier than the students of any other group of animals, thanks to the devoted labours of two little bands of enthusiastic students of the fishes, both American but working on different sides of the continent. In New York we have Professor Bashford Dean and his able coadjutors, while in California Professor David Starr Jordan has trained a whole school of young zoologists to assist him in his almost equally useful work.

The object of this review is not to abstract abstracts already sufficiently concise, but rather to call attention to these bibliographical monographs which are of almost unique importance. All contain, as is inevitable, errors of detail, but their breadth of outlook is beyond cavil and their general accuracy of a very high order.

Fish, as we all know, are the most ancient vertebrates of which unmistakable remains have been preserved and even the most highly developed members of the class have retained many primitive characters, probably because they have never deserted their original medium. A few highly specialized species are able to breathe air for a time, a few can hop about on land, a few can even glide through the air, but no species has become completely or even habitually terrestrial or aerial, all are aquatic, having their habitation and reproducing their kind in water. The great majority, moreover, still retain what was probably their ancestral home in the sea.

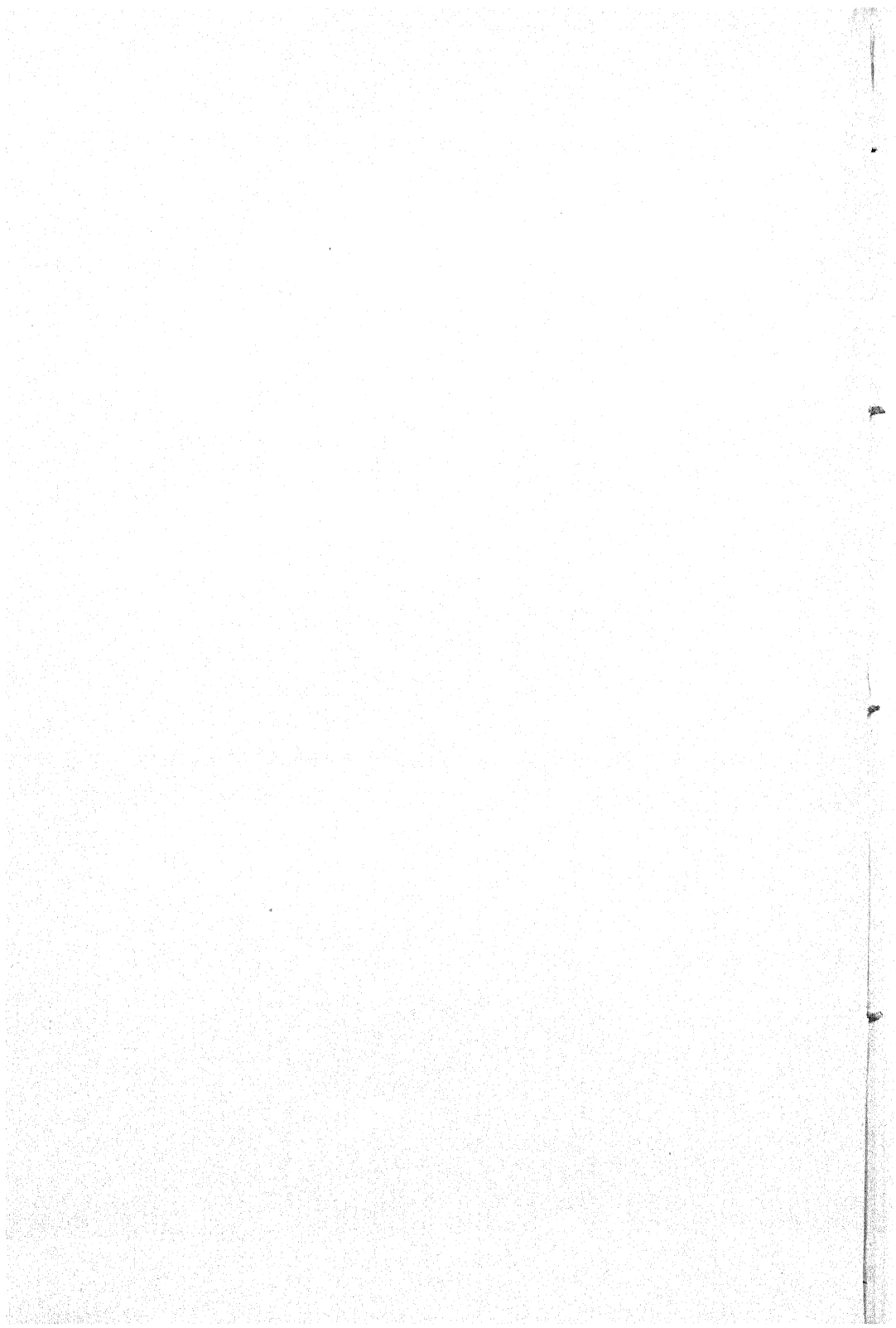
Professor Jordan in his "*Classification of Fishes*" (1923) mentions all the generic names which have so far been used in both the true fishes, the lampreys and the amphioxii, while in his "*Genera of Fishes*" (1917-1920) he gives the original references to the generic names and notes the genotype of each. Further he discusses the validity of certain of the genera in a general way. In the former work he recognises no less than 638 families in the three groups. Emphasizing his point of view that "analysis must precede synthesis," he has thought it "better to lay a certain stress on aberrant forms than to include them uncritically in expanded groups, the definition of which is impaired or denied by their presence." Seeing that all the fish genera since 1758 have been discussed, the vast scope of his investigations and the great debt we owe him are clear without further comment, but the fact that he deals with fossil as well as recent genera should not be allowed to escape notice.

Professor Jordan's work, however, is primarily for the specialist and has only an indirect interest for the philosophical naturalist, the fishery expert or the pisciculturist. Professor Bashford Dean and his coadjutors have approached the subject from a still wider, if more strictly bibliographical point of view. In two volumes, each of a little over 700 pages, they have given a list of the papers on recent and fossil fish published from 1758 to 1914, including over forty thousand titles. This list is arranged under the names of the authors, but in their third volume, which is of about equal length, they have compiled a singularly complete and admirably arranged subject index to all that has been written on fish and fisheries since the time of Linnaeus, with an author's catalogue of pre-Linnaean works in which such as those of Aristotle and, more surprising, of Ovid are not omitted. Other subjects discussed in the volume are periodicals relating to fish and fish-culture, voyages and expeditions on which fish were studied, institutions connected with fish-culture and text-books in which particular attention is paid to fish.

All this, is it easy to believe, is the result of 30 years' work. If only the matter can be kept up to date by a supple-

ment issued, say once in ten years, the gratitude of all interested in fish and fisheries to Professor Bashford Dean and to the American National Museum, which has published the three volumes, will be perpetual. No ichthyologist, palaeontologist, pisciculturist or fishery expert can afford to be without these three volumes which should be supplemented for all those undertaking ichthyological research by those of Professor David Starr Jordan. This is particularly true of India, in several of the colleges of which research on the anatomy of fishes is being undertaken with Day's volumes in the "*Fauna of British India*" and the same author's "*Fishes of India*" as sole works of reference. Invaluable as these monographs of Day were in their time, and indispensable as they still remain, they have, as is only natural, been superseded in many respects, by more recent investigations, and to trust to them alone is to court disaster.

N. ANNANDALE,  
S. L. HORA.



### 13. On Certain Local Names of the Fishes of the Genus *Garra*.

By SUNDER LAL HORA, D.Sc., *Officiating Superintendent,  
Zoological Survey of India.*

(Read at the Eleventh Annual Meeting of the Indian Science Congress  
and communicated with the permission of the Director, Zoological  
Survey of India.)

The fishes of the genus *Garra* (= *Discognathus*) are characterized by the possession of a more or less well-developed suctorial disc on the under surface of the head slightly behind the mouth. Most of the species of the genus,<sup>1</sup> which are numerous in the hilly districts of India and Burma, inhabit rapid-running water and protect themselves against swift currents by clinging to rocks and stones by means of their suctorial disc. This habit of the fish, its form and the morphological structure of the disc are the chief factors which are referred to in the local names of the species in various parts of India and Burma. In some species one or more proboscides are developed on the snout, and in some of the vernacular names a reference is made to this character.

In Northern India (the Punjab and the United Provinces) *pathar-chat* is the common name under which these fishes are known. Literally it means "stone-lickers" and obviously refers to the fish's peculiar mode of feeding, for it scrapes minute algae, etc., from the rocks and stone with the help of its sharp jaws. These food particles are prevented from escaping by loose folds of skin forming the false upper and the lower lips and are swallowed as they are set free. The fish as it feeds moves up the substratum, thrusting itself forwards by hardly perceptible movements of its tail, but at the same time clinging firmly to the substratum by means of its suctorial disc. Other fishes of similar habits such as the species of the genus *Glyptothorax* are also called *pathar-chat*.

There are two vernacular names of historic importance, *lamta* and *godyari*. At the beginning of the nineteenth century Buchanan found these names current in the Gorakhpur and Bhagalpur districts respectively. He evidently believed that the two names referred to the same species, for he says in his list of the fishes of the Gorakhpur district: "The Godyari of the Bhagalpur list is here called Lamta."<sup>2</sup> Moreover, he labelled

<sup>1</sup> Hora, *Rec. Ind. Mus.*, XXII, pp. 633-687, plates, xxiv-xxvi (1921).

<sup>2</sup> Day's volume on the Fisheries and Botany of Bengal in Hunter's *Statistical Account of Bengal*, p. 103 (1877).

an illustration of a species with the disc-character well-marked as *Cyprinus godyari* and in *An account of the Fishes of the Ganges* has described it as *Cyprinus lamta*. The illustration occurs among the manuscript drawings of this author, now preserved in the library of the Asiatic Society of Bengal. While gathering information for determining the specific limits of Buchanan's *lamta*, I undertook a tour to the exact localities whence Buchanan obtained his specimens of *godyari* and *lamta*. I was surprised to find, however, that neither of these names was familiar to the local fishermen. The name *lamta* or any similar name was quite unknown in the town of Gorakhpur and its vicinity, and inquiries even from the older fishermen elicited no information about it. Nor did they recognise as local fish some specimens of *Garra* which I had taken with me. In the hills south of Monghir (the Kharagpur Hills) whence Buchanan obtained his specimens of *godyari*, the fish was known under two names, *gudar* and *pathar-chat*. *Gudar* seems to be connected with *godyari*: in it reference is made to the sub-cylindrical form of the fish, for *gudar* means a cylindrical object in the local dialect. In the Kumaon Hills all the species of the genus *Nemachilus*, which possess more or less the same form of body, are called *gudar*.

In the Manipur Valley (Assam) a small species (*G. rupiculus*) is found in rapid-running water among pebbles and stones and is called *nug-nga* or "the stone-fish," while the larger species (*G. nasutus*) which is often found in the sluggish streams of the valley is called *nga-mu-sangum*. *Ophiocephalus* is known in Manipuri as *nga-mu* or "the black-fish." According to some Manipuris *G. nasutus* is like an *Ophiocephalus* but possesses a *sangum*, i.e. "an umbrella" or "a mushroom." This refers to the mental disc. According to others, however, *sangum* is an insect which lives in grass and by its bite produces a swelling—again a reference to the disc which is supposed to resemble the swelling. It is not the Manipuris alone who associate species of *Garra* with those of *Ophiocephalus*, for in Canarese also, according to Day<sup>1</sup> *Garra* is known as *Pandi-pakke*, "the stone *Ophiocephalus*."

I am indebted to Dr. B. Sundara Raj, Director of the Madras Fisheries, for the following information: "The fishes of the genus *Garra* (*Discognathus*) are known by the following names in this Presidency. Tamil '*Kal Koruvai*,' title from clinging to rocks, *Kal* (Tamil) = stone + *Kuruvai* (Tamil) = shortness. In the Coimbatore District, it is called in Tamil '*Nai Kaha*' or '*Kul Kaha*'; the etymological meaning of the words '*Nai*' and '*Kaha*' is not known; *Kul* means in Tamil stone. Dr. Day's Canarese name of the fish consists of two well-known Canarese words '*Pandi*' and '*Pakke*' meaning, pig and fish

<sup>1</sup> Day, *Fish-India*, p. 528 (1878).

respectively. In the South Kanara District it goes by the name 'Kal mura' (*Kal* means 'stone' and *mura* probably 'fish') i.e. stone fish; in Tulu also it is called *Kal mura*. In the name *Pandi Pakke* probably reference is made to the proboscis on the snout which looks very much like the snout of a pig.

According to Mr. C. R. Narayan Rao, to whom I am obliged for the information, "*Garra* is known in Mysore to the fishermen as "*Rathi Koraka* (Telugu), "*Kal Meenu*" (Kannada, i.e. Canarese) and in Coorg "*Handi Kurlu*" (Canarese).

*Rathi* = *Kāl* = stone.

*Koraka* = sucker.

*Meenu* = fish or Carp.

*Handi* = pig.

*Kurlu* = corrupt."

For the name *Korafi-Koali* mentioned by Day as current in Mysore Mr. Rao gives the following explanation: "*Koravai* = *Koravan* = thief; from the habit of the fish slowly approaching the surface and then suddenly darting to catch air—then as suddenly disappearing below." This name is also applied to *Ophiocephalus punctatus*. *Koali* (Tamil)—corruption of *Kolai*—referring to the inedible nature of the eggs of the fish. *Koali* is the name of *Rasbora daniconius* also."

In the Khasi Hills the species of *Garra* are known under three appropriate names, viz. *Sherdong*, *Usher-keu* and *Udoh-arkhmüt*. In the first two names a reference is made to the habit of the fish, while the third means "double-nosed fish" in reference to the proboscides present on the snout of adult specimens of *Garra gotyla*. *Sherdong*, which means a fish that circles round (*Sher* = fish, *dong* = to circle round), refers to the habit of these fishes, which go round and round a fisherman when he tries to catch them. In floods the fish are said to climb up rocks in rapid water in shoals, and hence the Khasi name *Usher-keu*, for *keu* means "to climb up" and *usher*, a fish.

The Inthas of the Southern Shan States (Burma) living in the neighbourhood of the Inlé Lake know *Garra* as the "post-climbing fish" (*nga taing-tet*). To understand the significance of this name, which is applied to *Garra gravelyi*, it is necessary to realize that houses are often built by the Intha on posts standing in water as much as ten or twelve feet deep. Dr. Annandale<sup>1</sup> describing the habit of *G. gravelyi* in the Inlé Lake, says: "We lived for some time in a house of the kind more than a mile from shore in the Inlé Lake, and it was possible to watch the ascent of the house posts by the fish, which was

<sup>1</sup> Annandale, *Rec. Ind. Mus.*, XIV, p. 45 (1918); for other details about Inlé Lake see Annandale, *Bombay Journ. Nat. Hist. Soc.*, XXVIII, pp. 1038-1044, 3 pls. (1922).

usually seen in the first instance swimming out from a thicket of weeds. It then settled with its head pointing upwards, low down on one of the house-posts and began to move up it slowly, browsing as it did so on the small algae and polyzyoa (*Hislopia lacustris*) with which the posts were covered. The sucker-like structure of the lips enabled it to retain a fairly tight hold on the post while it remained still; its ascent was effected by gentle almost imperceptible movements of the tail."

At He-Ho, a few miles from the Inlé Lake, where there are no posts for the fish to climb, this same species is known as "stone-climbing fish," *nga kayauk-tet*.

In the Darjiling Himalayas<sup>1</sup> there are two species of *Garra*, *G. gotyla* and *G. annandalei*. The former possesses proboscides on the snout, while in the latter this region is smooth. On this morphological difference the two species are distinguished from each other by the local fishermen and probably it is to this character that a reference is made in the local names of species.

*List of Vernacular names of the Fish of the genus Garra.*

Locality.	Local Name.	Meaning of Local Name.
N. W. Provinces; certain districts of the Punjab and the United Provinces.	<i>Pathar-chat</i> ..	<i>Pathar</i> = stone; <i>chat</i> =to lick. Stone-licking fish.
Punjab ..	<i>Dhoguru</i> * ..	..
" ..	<i>Koorka</i> * <sup>2</sup> ..	..
Gorakhpur (U.P.) ..	<i>Lamta</i> ..	..
Monghir (Behar) ..	<i>Godyari</i> ..	..
" ..	<i>Gudar</i> ..	Cylindrical fish.
Bengal ..	<i>Choak-si</i> * <sup>3</sup> ..	..
Darjiling Himalayas	<i>Budena</i> ..	Probably refers to the proboscis on the snout.
" ..	<i>Luheri</i> ..	..
Khasi Hills (Assam)	<i>Udoh-arkhmüt</i> ..	Double-nosed fish.
" ..	<i>Sher-dong</i> ..	Fish that circles round and round a fisherman.
" ..	<i>Usher-keu</i> ..	<i>Usher</i> =fish; <i>Keu</i> =to climb, rock-climbing fish.

<sup>1</sup> I am indebted to Mr. G. E. Shaw for the following information:— In the Darjiling Himalayas *Garra gotyla* is called *Budena* and *G. annandalei* is named *Luheri*. "But no one here seems to know what the names mean or why they are so called."

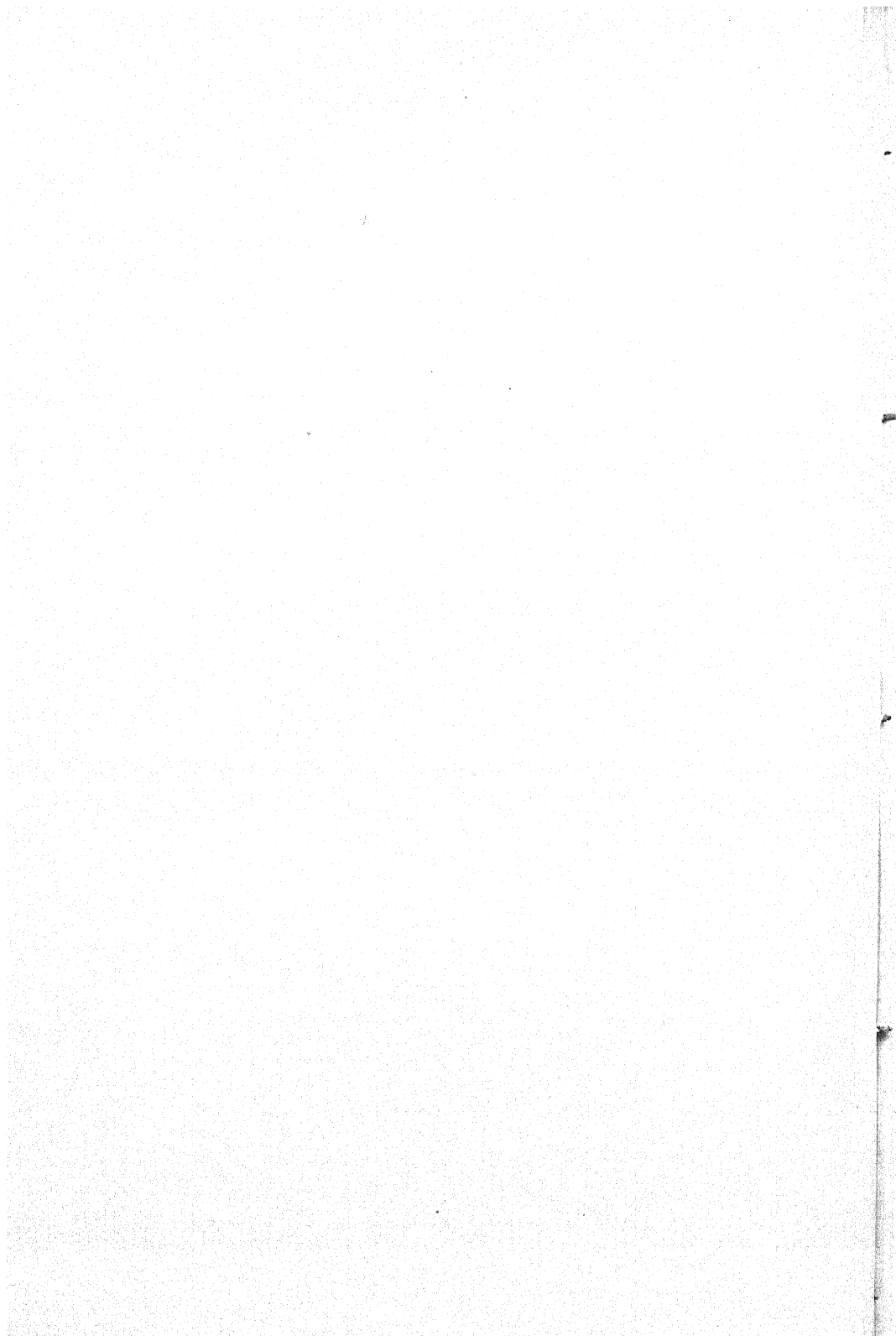
<sup>2</sup> Mr. Donald of the Punjab Fisheries has informed me that fishermen of the Kangra District "can give no reason for, or meaning of the word *Kurka* as applied to *Discognathus lamta*." (*G. gotyla* is found in the Kangra valley.)

<sup>3</sup> I have not been able to find any suitable explanation for *Choak-si*. This name is not known to most of the Bengalis living in Calcutta, nor have I been able to find its meaning.

\* The local names marked with an asterisk (\*) are taken from Day.

Locality.	Local Name.	Meaning of Local Name.
Manipur (Assam) ..	<i>Nug-nga</i> ..	<i>Nug</i> =stone; <i>nga</i> = fish. Stone-fish.
„	<i>Nga-mu-sangum</i> ..	<i>Nga</i> =fish; <i>mu</i> = black; <i>sangum</i> =umbrella or mushroom, or refers to an insect. Black fish with an umbrella or swelling on the chin.
Inlé Lake, S.S. States (Burma).	<i>Nga taing-tet</i> ..	<i>Nga</i> =fish; <i>taing</i> =house-post; <i>tet</i> =to climb. House posts climbing fish.
He Ho, S.S. States (Burma).	<i>Nga kayauk-tet</i> ..	<i>Kayauk</i> =stones. Stone climbing fish.
“Canarese” ..	<i>Pandi-pakke</i> *	“Stone ophiocephalus” pig fish.
“Tamil” ..	<i>Kul-korava</i> *	<i>Kul</i> =stone. Probably means stone fish.
Coimbatore District..	<i>Nai-kaha</i> ..	..
(Tamil) ..	<i>Kul-kaha</i> ..	Stone fish. ..
South Kanara District	<i>Kal-mura</i> ..	Stone fish.
Tulu ..	„	..
Mysore ..	<i>Rathi-koraka</i> (Telegu)	<i>Rathi</i> = stone; <i>koraka</i> = sucker. Stone suckers.
„	<i>Kal-meenu</i> (Canarese)	<i>Kal</i> =stone; <i>meenu</i> =fish. Stone fish.
	<i>Korast-koali</i> *	.. A thief fish with inedible roe.
Coorg ..	<i>Handi-kurlu</i> ..	<i>Handi</i> =pig; <i>kurlu</i> =corrupt. Corrupt pig fish.

\* The local names marked with an asterisk (\*) are taken from Day.



# 14. On a Peculiar Disposition of the Liver and the Kidney in the Fish Genera *Clarias* and *Saccobranchus*.

By SAT KORI DUTTA, M.Sc., *Research Scholar, Zoology Department, University of Allahabad, Allahabad.*

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## I. INTRODUCTION.

During the course of my work on the excretory system of Indian fishes, a work suggested to me by Professor D. R. Bhattacharya of the University of Allahabad, my attention was drawn to a peculiar disposition of the liver and the kidney in the fishes belonging to the Siluroid Genera, *Clarias* and *Saccobranchus*. On looking up the literature on the subject, I found that though this peculiarity had been recorded in *Clarias neuhofti* from Sumatra by Max Weber (19) and in *Saccobranchus fossilis* by Hyrtl (10) and Pape (13), yet some facts remained to be elucidated for the Indian species *Clarias batrachus*, and *Saccobranchus fossilis*. I propose dealing with them in the present communication.

Besides *Clarias* and *Saccobranchus*, the peculiarity in the disposition of the liver and the kidney has been found to exist and has been recorded in *Plotosus* by Cuvier and Valenciennes (5) and later on substantiated by Max Weber (19). Weber had also had the opportunity to investigate *Heterobranchus isopterus* in which he suspected that the extra-abdominal liver lobe was connected with the intra-abdominal main mass through a stalk but the specimens in his possession were unfortunately very badly preserved for detailed investigation, and he was, therefore, unable to say with precision whether the liver and the kidney possessed the same peculiarity as in *Plotosus* and *Clarias*.

Hyrtl (10) has given the following description of the kidney of *Arius cous* :—"The kidney is divided into a head and a body part. The head piece stretches itself lengthwise on the lateral pectoral fin. It forms a rounded swelling which

forms a groove on the outer side and becomes covered only by the slimy skin of the gill opening." Further about the body lobe of the kidney Hyrtl says :—"Anteriorly it consists of two thick lobes partly separated from one another, each of which curves outwardly on the posterior edge of the swim-bladder to become attached in a hook-shaped way on the upper and outer side of the lateral process of the second vertebra and thus extends on the dorsal surface of the fish to a point below the skin, where the latter becomes specially thickened." Hyrtl has not mentioned anything about the condition of the liver in *Arius cous*.

This peculiarity, which is described subsequently in this communication, may with a fair amount of certainty be ascribed to form a characteristic feature of the two genera of fishes *Clarias* and *Saccobranchnus*. It may as well be asserted that this feature of the liver and the kidney is also found in a few other genera of the sub-family Clarinae, e.g. *Plotosus* (vide Cuv. and Val.) *Heterobranchus* (vide Weber) and *Arius* (vide Hyrtl).

I have to offer my sincere thanks to Professor D. R. Bhattacharya who helped me a great deal with valuable advice and criticisms. The work involved in this investigation has been mainly done in the Zoological Laboratory of the Muir Central College, Allahabad, under the guidance of Professor D. R. Bhattacharya and also partly in the Laboratory of the Zoological Survey of India, the Indian Museum, Calcutta, under the supervision of Drs. N. Annandale, B. Prashad and S. L. Hora. My sincere thanks are due to them and especially to Dr. B. Prashad from whom I received considerable aid in looking up most of the literature on the subject.

## II. MATERIAL AND TECHNIQUE.

The general relationship of the various organs were investigated by dissection of a large number of individuals of the genera *Clarias* and *Saccobranchnus* obtained from different localities in the United Provinces and in Bengal. I have not been able to discover this remarkable peculiarity in the disposition of the liver and the kidney in any other fish although I have examined about fifty species of freshwater fish belonging to the following genera :—

Sub-class—Teleostei

Order—Physostomi

Family Siluridae

1. *Wallago*
2. *Eutropichthys*
3. *Callichrous*
4. *Aila*
5. *Pseudotropius*

6. *Macrones*

7. *Rita*

Family Cyprinidae

8. *Discognathus*
9. *Labeo*
10. *Cirrhhina*
11. *Calla*
12. *Barbus*

13. <i>Chela</i>	16. <i>Anabas</i>
Family Notopteridae	Family Sciaenidae
14. <i>Notopterus</i>	17. <i>Sciaena</i>
Order—Acanthopteri	18. <i>Sciaenoides</i>
Family Ophiocephalidae	Order Plectognathi
15. <i>Ophiocephalus</i>	Family Gymnodontes
Family Labyrinthici	19. <i>Tetrodon</i>

Day's (8) scheme of classification has been followed.

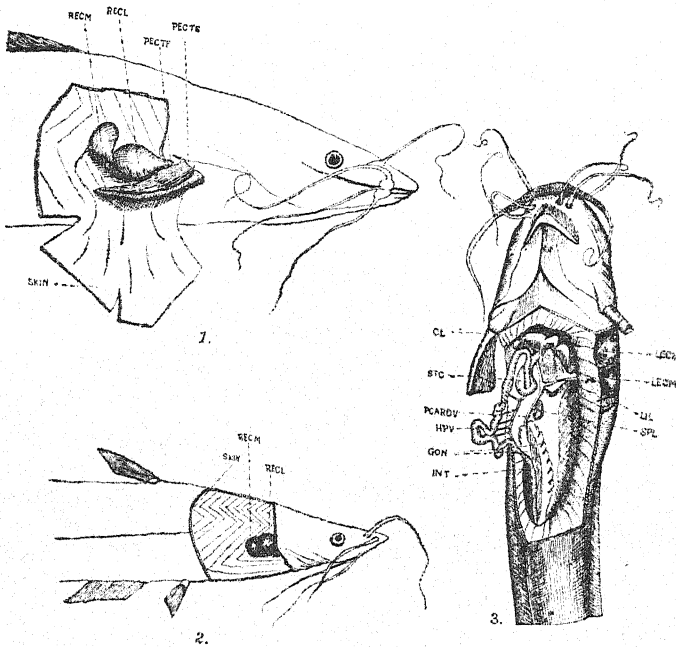
For histological work the isthmus of the liver and that of the kidney with fairly large pieces of extra and intra-organs attached on either side were fixed either in Mann's or Zenker's fixatives. These were sectioned by the ordinary paraffin method. Sections stained with borax carmine and picro-indigo carmine gave good result with Mann's fixation. Objects fixed in Zenker's were stained with Delafield's haematoxylin which was diluted with ten times its bulk of distilled water, and in which the slides were kept over-night. This also gave satisfactory results.

### III. POSITION AND STRUCTURE OF THE LIVER AND KIDNEY.

1. *Clarias batrachus*.—The average length of *Clarias batrachus* is 20 cm. but specimens often attain a length of 25 cm. or more. The average length of the coelom in a full-grown specimen is about 6 cm. and its breadth about 2 cm.

The liver is divided into the usual two right and left halves of equal dimensions and as shown in figure 3, lies inside the body cavity or coelom (Fig. 3, Cl.). In *Clarias neuhofti* on the other hand Weber (19) describes the main mass of the liver which lies in the body cavity to be divided very incompletely into right and left halves. The left extends with the dorsal lobe very far posteriorly, while the right is much smaller. To the last, the long gall bladder is attached as is also the case in *Clarias batrachus*. Each half of the liver of *C. batrachus*. is composed of two lobes—the dorsal and the ventral lobes. The length of each half of the liver in the interior of the body cavity does not exceed more than 20 mm. The ventral lobe of each half of the liver sends out on its outer and lateral side an outgrowth—a long solid tubular structure about 6 mm. in length and 1 mm. in diameter—which passes through an aperture in the body-wall and expands into a solid lobe like portion of the liver lying outside the body muscles just underneath the skin. (Figs. 1, 2, 3, 4, 5, RECL.) The perforation in the body-wall is lined by the somatic layer of the coelomic epithelium which is also continued over what may be called the "extracoelomic" portion of the liver described above. Thus, where the muscles are

bored through a peritoneal sac is formed underneath the skin closely investing the extra-abdominal liver lobe which is quite a big structure measuring about 13 mm. in length, and 8 mm. in breadth, with a thickness of about 5 mm. It is situated at the base of the pectoral fin in close proximity to the pectoral spine and pressing against the body-wall forms

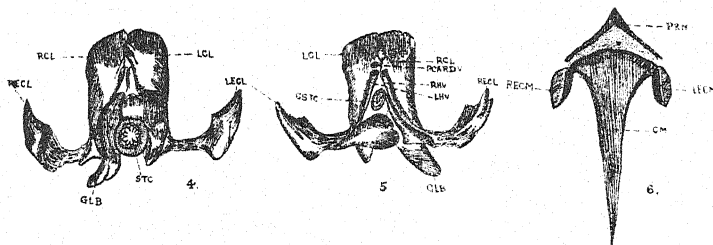


- Fig. 1. Lateral view of *Clarias batrachus* with the skin cut open to expose the extra-coelomic lobes of the liver and the kidney. PECTF, pectoral fin; PECTS, pectoral spine; RECL, right extra-coelomic liver; RECM, right extra-coelomic kidney lobe.
- Fig. 2. Lateral view of *Saccobranchius fossilis* with the skin removed to expose the extra-coelomic organs. Lettering as in Fig. 1.
- Fig. 3. *Clarias batrachus*, dissected with the viscera *in situ*. CL, coelomic liver; GON, gonad; HPV, hepatic portal vein; INT, intestine; LECL, left extra-coelomic liver; LECM, left extra-coelomic kidney lobe; PCARDV, posterior cardinal vein; SPL, spleen; STC, stomach.

for itself a cup-shaped pit or depression in it. The body-wall is quite thick and muscular measuring about 4 mm. in thickness. The slender stalk of the liver substance joining the coelomic liver with the extra-coelomic liver may be called the "isthmus" of the liver. It lies inside the canal lined by the parietal peritoneum of the body-wall. The isthmus of the

liver is somewhat longer than the thickness of the muscle through which it bores through. The liver lobes and the isthmus are covered by the usual visceral peritoneum.

Posteriorly and in close proximity to the extra-coelomic liver lobe lies a round mass of kidney of a dark brown colour (Figs. 1, 2, 3, 4, RECM). This mass, which is also situated outside the body-wall and close beneath the skin, is connected by a short branch to the anterior corner of the kidney which lies in the usual position. This portion of the kidney is only slightly smaller in size than the adjoining extra-coelomic liver lobe. Its histological structure shows that it is a degenerate portion of the mesonephros which has ceased to perform its function, the excretory function being chiefly carried on by



- Fig. 4. The liver of *Clarias batrachus*; ventral view. GLB, gall bladder; LCL, left coelomic liver lobe; LECL, left extra-coelomic liver; RCL, right coelomic liver lobe; RECL, right extra coelomic liver. STC, cut end of stomach.
- Fig. 5. The liver of *Clarias batrachus*; dorsal view. CSTC, cut end of the cardinal end of stomach; PCARDV, posterior cardinal vein; LHV, left hepatic vein; RHV, right hepatic vein; other letters as in fig. 4.
- Fig. 6. The kidney of *Clarias batrachus*; ventral view. CM, kidney proper; LECM, left extra-coelomic kidney lobe; PRN, head kidney or pronephros; RECM, right extra-coelomic kidney lobe.

the kidney proper lying inside the body-cavity. It is 7 mm. in length, 6 mm. in breadth and 4 mm. in thickness. The connecting isthmus of the kidney is much shorter and stouter than the isthmus of the liver and measures only about 3 mm. in length. The isthmus of the kidney lies dorsal to the isthmus of the liver. Since the kidney as a rule lies outside the peritoneal cavity a protrusion of this peritoneal sac of the kidney is not necessitated by its outgrowth. Immediately after the emergence of the kidney through the punctured wall, it swells up to form what I call the "extra-abdominal" or "subcutaneous" portion of the kidney. The isthmus in this case takes its origin from the antero-lateral side of the kidney proper. There is no such peritoneal covering as is found in the case of the liver outgrowth. It is also noteworthy that the

inner surface of the skin in this situation just above the extra-coelomic kidney is not smooth owing to the outer surface of the organs which it covers being irregular. It shows numerous projections of fatty tissue which fills up the interstices or furrows between the lobes of the extra-coelomic liver and the kidney.

2. *Saccobranchus fossilis*.—The remarkable peculiarity in the disposition of the liver and the kidney described above is also to be found in *Saccobranchus fossilis*. The arrangement in the two fishes is exactly alike.

The length of an adult *Saccobranchus fossilis* varies from 12 to 13 cm. and the breadth is a little more than 2 cm. The lobes of the liver and the kidney are accordingly much smaller in size. The coelomic liver lobes of *Saccobranchus fossilis* are

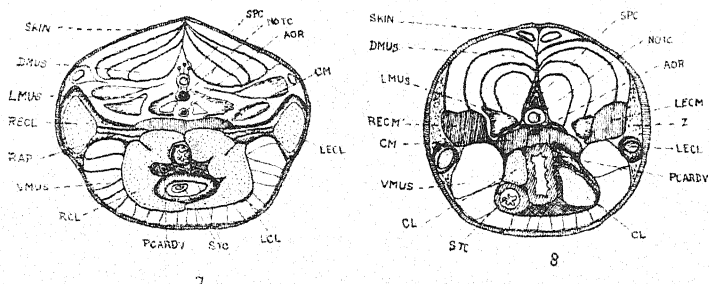


Fig. 7. Transverse section of the body of *Clarias batrachus*, through the region of the isthmus of the liver AOR, dorsal aorta; CM, kidney proper; DMUS, dorsal muscle; LCL, left coelomic liver lobe; LECL, left extra-coelomic liver lobe; LMUS, lateral muscle; NOTC, notochord; PCARDV, posterior cardinal vein; RAP, aperture in the body-wall; RCL, right coelomic liver lobe; RECL, right extra-coelomic liver; SPC, spinal cord; STC, cut end of stomach; VMUS, ventral muscle.

Fig. 8. Transverse section of the body of *Clarias batrachus* through the region of the isthmus of the kidney. CL, coelomic liver; LECM, left extra-coelomic kidney lobe; RECM, right extra-coelomic kidney lobe; Z, fat; other letters as in fig. 7.

each 15 mm. in length and 8 mm. in breadth and the connecting isthmus is not more than 5 mm. The extra-coelomic liver lobe is 5 mm. in length and 4 mm. in breadth. The extra-coelomic kidney is still smaller in size being 4 mm. in length and 3 mm. in breadth and is connected to the main mass of the kidney by a very short branch of about 2 mm. in length.

#### IV. HISTOLOGY OF THE LIVER AND THE KIDNEY IN *Clarias batrachus*.

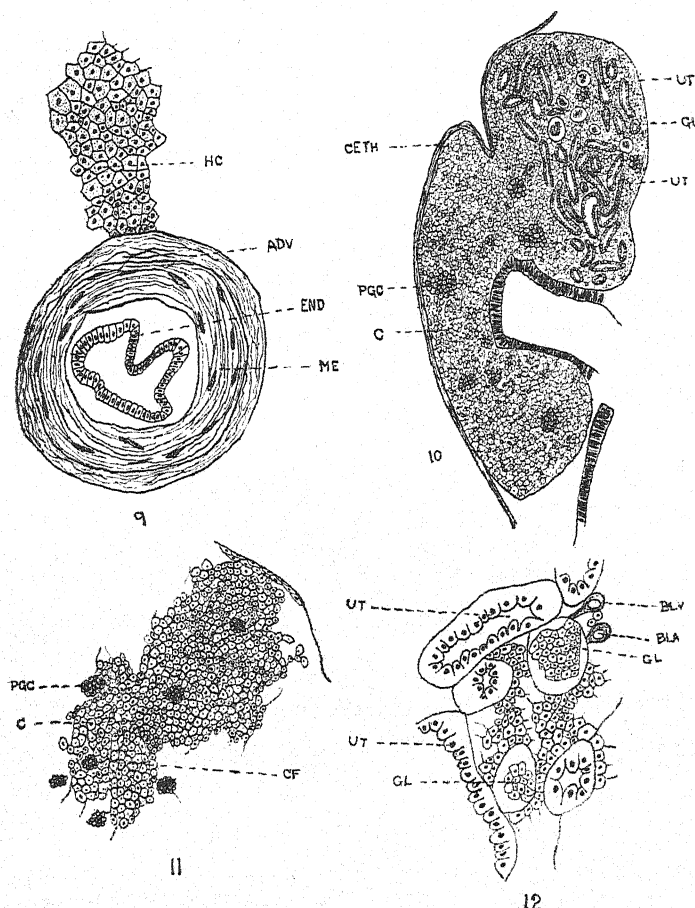
1. THE LIVER.—The liver is composed of the usual type of polygonal hepatic cells. A careful examination of a series of

transverse sections of the isthmus with portions of the extra- and intra-coelomic liver attached to both ends shows that the general appearance of the liver cells is exactly alike throughout the series, there being very little modification in the cell structure of the portion of the liver lying outside of the body-cavity. That the outside portion of the liver is quite as functional as the intra-coelomic liver is clearly proved by the similarity of the microscopical structure of cells and the general arrangement of the blood vessel therein. The hepatic vein originates in the extra-coelomic liver and passes through the isthmus, runs upwards being imbedded in the dorsal wall of the lobes of the intra-coelomic liver. It finally leaves the liver at the back of the organ and opens into the heart. The hepatic artery, slender in size, enters the liver at the union of the right and left halves of the liver. The endothelium of the blood vessel is represented by very definite and conspicuous cells which are cubical in shape and in several instances are seen detached from the underlying muscular fibres. There is a great development of the muscular and elastic tissue both in the artery and the vein and specially in the smaller blood vessels.

2. THE KIDNEY.—The entire absence of any uriniferous tubules, Malpighian capsules and glomeruli, is the most remarkable feature in the histology of extra-coelomic kidney, i.e. the lobe lying outside the body wall just underneath the skin (Fig. 11). Microscopic examination of transverse sections under high power shows that the extra-coelomic kidney consists of compact cells or groups of cells connected by connective tissue fibres. Each cell has a definite cell-outline and a nucleus; scattered here and there are groups of cells whose protoplasm is extremely pigmented, and these evidently impart the characteristic dark brown colour to the organ.

The fact that there is absolutely no trace of any uriniferous tubules, definitely and clearly indicates that this portion of the kidney is a non-functional and degenerate organ. It has been established that the pronephros which is found in the embryos of almost all teleostean fishes is purely a larval organ and never performs any active part in the adult excretory system. Since the extra-coelomic kidney is a degenerate structure it cannot be regarded as the remnant or the last trace of the larval head kidney, because there happens to remain the vestige of the pronephros inside the body just anterior to the functional mesonephros (Fig. 6). Moreover, the extra-coelomic kidney is connected to the kidney inside the body by a short isthmus. All these facts tend to show that it is a portion of the mesonephros which has become degenerated at a later stage of development.

An examination of a series of transverse sections of the isthmus of the kidney shows that the uriniferous tubules and the associated structures gradually disappear as we proceed



- Fig. 9. Transverse section of the isthmus of the liver showing the hepatic cell-structure, and the section of the hepatic vein showing the endothelial lining detached from the musculature of the blood vessel. ADV, adventitia of the hepatic vein; END, endothelium of hepatic vein; HC, hepatic cells; ME, media of hepatic vein.
- Fig. 10. Transverse section of the isthmus of the kidney showing the tubular structure in the upper and degenerate structure in the lower portion. C, cells of degenerate kidney; CETH, connective tissue and coelomic epithelium; GL, glomerulus; PGC, pigment cells; UT, uriniferous tubules.
- Fig. 11. Transverse section of the extra-coelomic kidney showing the degenerate structure; the entire absence of uriniferous tubules is very characteristic. C, cells of degenerate kidney; CF, connective tissue fibres; PGC, pigment cells.
- Fig. 12. Transverse section of the intra-coelomic kidney showing the normal renal structure. BLA, capillary of renal artery; BLV, capillary of renal vein; GL, glomerulus; UT, uriniferous tubules.

from the intra to the extra-coelomic portion of the kidney. Figure 10 represents the transverse section of the isthmus of the kidney which shows that the upper part has retained a few scanty and much scattered uriniferous tubules, whereas the lower portion presents a degenerate appearance.

Sections of the internal kidney (Fig. 12) or the kidney lying inside the body, exhibit typical renal structure. The glomerulus is covered by flat epithelial cells, the cell outline of which is not very distinctly pronounced. The tubules are fairly large and have the usual epithelial lining, the cells of which are conspicuously large in size.

#### V. CONCLUSION.

This unusual position of the liver and the kidney can be regarded with a very fair amount of probability to be due to the smallness of the body-cavity in which the comparatively larger liver and the kidney do not find enough space and are thus thrust outside. Obviously, the principal internal organs such as the liver and the kidney, if they do not find sufficient space in the coelomic cavity for their full development must either become stunted in size or find room for their proper development elsewhere. The outward displacement of the portion of the liver and the kidney may be looked upon as a phenomenon analogous to the descent of the testes in mammals.

Weber (19) offers the following suggestions as regards the above:—"Owing to the compression of the lateral surface, the swim bladder lies directly under the skin; and the laterally growing swim bladder carries along with it the small lobe of the liver and the kidney which come to lie in the special peritoneal cavity outside the coelom. The lateral development of the swim bladder in its turn depends on the working of the Weberian apparatus." From this view, I am inclined to disagree since there are instances (e.g. in *Rita*, *Sciaenoides* etc.) where owing to the general shrinking of the body cavity a portion of the gas bladder has taken up a subcutaneous position but has not carried along with it the small lobes of the liver and the kidney. The fact that the lateral part of the swim-bladder leaves the body-cavity and lies in between the ventral and dorsal portion of the dorso-lateral muscle is well known in the case of many Siluroids. Sagemehl (14) made a sort of division of the Siluroids upon the extent of the lateral outgrowth of the gas bladder. It does not seem to be very likely that in all these cases the gas bladder carries outside along with it portions of the liver and the kidney, and the hypothesis does not appear to fit in for each and every case. However, the real significance and a clear explanation either from the physiological or morphological point of view of this extraordinary position of the organs outside the body-wall can

only be ascertained by a study of the development of the fishes which owing to lack of material I have not yet been able to accomplish.

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15. The Sources of the Material for Hamilton Buchanan's  
Fishes of the Ganges, the Fate of his Collections,  
Drawings and Notes, and the Use made of his Data.

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INTRODUCTION.

"An Account of the Fishes Found in the River Ganges and its branches,"<sup>1</sup> by Francis Buchanan afterwards Hamilton, is one of the outstanding works on the fishes of India. It is the earliest work on Indian fresh-water fishes as Patrick Russell's "Fishes of Vizagapatam" (1803) is the earliest for the marine fishes. And it is interesting to note that both works are indirectly the outcome of the activities of the old East India Company, products of the interest in natural history of two of its surgeons.

Recently there have come to me certain facts bearing on the sources of Buchanan's data, and I have been enough interested to take the trouble necessary to go into the matter fully. Having the facts at hand it has seemed worth while making of them a definite record in order even at this late day to give Buchanan the credit for good work which has for a hundred years been denied him.

SOURCES OF BUCHANAN'S MATERIAL.

Francis Buchanan (1762-1829) entered the services of the East India Company in 1794 as surgeon in the Bengal Establishment, and in the next year began his exploratory and survey work on being sent on such a mission to the court of Ava. During the years 1796, 1797, and part of 1798 he was stationed at Lukhipur and at Baruipur in the Ganges delta in south-eastern Bengal where he began his work of describing the fishes of the Ganges. Later in 1798, he was employed by the Board of Trade of Calcutta to make a survey of the district of Chittagong in the ancient kingdom of Tripura.

His exceptional ability as a keen observer being recognized, he was employed to make various other surveys. At the behest of Lord (then Marquis) Wellesley he made in 1800 and 1801 a survey of Mysore, Canara and Malabar in southern India, his results being published in his "Journey from Madras through the countries of Mysore, Canara and Mala-

<sup>1</sup> Edinburgh, 1822, 405 pp., 59 pls. with 97 figs. 4°.

bar," etc., 3 vols, London, 1807, 4°. During 1802-03 he spent 14 months in Nepal and later two years on its frontier, in sections lying among the head waters of the northern tributaries of the Ganges. The results of this survey were published as his "Account of the Kingdom of Nepal." Edinburgh, 1819, 4°.

In 1803 he was appointed surgeon to the Governor-General, Lord Wellesley, and during 1804 and 1805 had charge of the menagerie established by the latter at Barrackpur 15 miles north of Calcutta. Next Buchanan went to England with Wellesley late in 1805 but returned to India after a year's furlough.

So successful had been Buchanan's work of making general surveys of the agriculture, arts, commerce, resources, religion, manners, customs, natural history and antiquities of these countries, and so highly was his work approved by the authorities of the East India Company, that its Court of Directors, in 1806, authorized a statistical survey of Bengal by him. Specific orders were given him by Governor General Lord Minto in September 1807, and he at once began his work. His travels in Bengal occupied the remainder of 1807 and the years up to and including 1814. He made minute surveys of Dinajpur, Rangpur, Puraniya, Bhagalpur, Behar and the city of Patna, Shahabad, and Gorakhpur, and even then covered only part of the Bengal Presidency. The total cost of this survey was £30,000.

On each district noted above, Buchanan submitted lengthy reports accompanied by statistical tables, maps, and drawings. Included in these (as will be seen later) were extensive notes and drawings on the fishes and fisheries of Bengal. His notes filled 21 manuscript volumes of large size and in addition there were 7 of statistical tables.

In 1814 following the cessation of his exploratory work in Bengal, Buchanan, whose primary interest seems to have been in Botany, in which he had had special training, was made Superintendent of the Botanical Garden in Calcutta upon the death of Dr. Roxburgh. This post, although very congenial to him, he resigned after a year because of ill health and by reason of family affairs which took him to England in 1815.<sup>1</sup> He was succeeded at the garden by Dr. Nathaniel Wallich.

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<sup>1</sup> A few lines may be in order concerning Buchanan's change of name. In 1815 he returned to England for the last time, and, both his parents having died, he fell heir to the extensive property of his mother (a Miss Hamilton), and in recognition of this assumed her name. For a number of years he was known to English and Indian writers as Francis Buchanan Hamilton, but at the suggestion of Cuvier in ichthyological literature he is commonly referred to as Hamilton Buchanan. It is unfortunate that in scientific literature he should be designated in these two different ways.

THE FATE OF BUCHANAN'S COLLECTIONS, NOTES  
AND DRAWINGS.

Buchanan took to England with him and presented to the Court of Directors of the East India Company collections of plants and minerals, Indian drugs, various geographical notes and genealogical tables, notes on natural History subjects, a few drawings, 900 Indian coins, and 20 Indian MSS. (Chambers). These we must presume were his own personal property or else were duplicates, for he wished to take from India *all* his notes and drawings for deposit in the East India Company's museum since he considered this "the most probable means of rendering them useful to science." Objections, however, were made which frustrated this design, as we shall see later.

In 1826, Buchanan published in the *Transactions* of the Royal Society of Edinburgh a paper giving with special reference to his botanical collections a resumé of his journeyings in India. Of the transfer of his collections and drawings he says that:—

"While preparing for the journey [to England], I was deprived by the Marquis of Hastings of all the botanical drawings which had been made under my inspection during my last stay in India [since 1805], otherwise they would have been deposited, with my other collections, in the Library of the India House. By this ill-judged act of authority, unworthy of this Nobleman's character, the drawings will probably be totally lost to the public. To me, as an individual, they were of no value, as I preserve no collection, and as I have no occasion to convert them into money. In February, 1815, I embarked for Europe, and in September presented my whole [personal ?] collections to the Court of Directors."

As to the details of this matter, we find the following interesting data in the correspondence relating to this proposed transfer. In a communication (dated July 27, 1816) from Dr. Hare (who seems to have been *ad interim* in charge of the Botanical Garden before Dr. Wallich took it over) to the Chief Secretary of the Indian Government, we read:

"In a letter from . . the Governor General [Lord Hastings] of the 5th January, 1815, His Excellency says: 'by a letter from Dr. Buchanan received here, it appears that he proposes to carry to Europe all the drawings of animals and plants collected by him during the tour which he was employed to make in this country. Dr. Buchanan states that it is his object to request the Court of Directors to accept this collection as a present from him. Now, I apprehend that these drawings are already the property of the Hon'ble

Court, the services for which Dr. Buchanan was employed and paid having specifically been the furnishing of Government with a knowledge of the animal and vegetable productions of this country, delineations are essentially included in this service.' ”

Dr. Buchanan's answer shows that permission to take the drawings to Europe had been asked for by him and granted by the Honourable Vice-President in Council, and now having been withdrawn by Lord Hastings, the President of the Court, he returned the drawings with the following statement :—

“...my object in requesting that I might be permitted to present the drawings to the Court of Directors, did not originate in a view of claiming the merit of making a present to the Company of its own property, but arose from a conviction that their being deposited in the collection at India House was the most probable means of rendering them useful to science.”

Let us now go into as careful and detailed a consideration as the data at hand will allow of the fate of Buchanan's other collections. (i.e., those which were the property of the East India Company). First he states (1826) that his earlier botanical collections were from time to time sent to Sir Joseph Banks, to Dr. Roxburgh, to Sir J. E. Smith, and to Mr. A. B. Lambert. Notes of course went with them, while either the original notes or duplicates were generally if not always deposited with the East India Company, either in Bengal or in London. As to the fate of Buchanan's zoological collections, practically nothing is known. It will be remembered that he states that he kept no collections whatever. The interest of this article, of course, centres most in his fishes. These, in part at least, were certainly sent to England, for Günther in volume III of the Catalogue of Fishes in the British Museum (p. iv of preface), in acknowledging receipt of certain collections says : “ 6. A Collection of Fishes from Bengal, believed to contain many typical specimens of Buchanan-Hamilton's work, presented by G. R. Waterhouse, Esq.” As to how these collections of fishes got to England, absolutely no record exists. Day (1877) states that he personally made inquiries at the India House, but could find no records of the transfer of these fishes to it by Buchanan. However, he does tell us (1877) that some of the labels on these fishes in the British Museum were in a handwriting very similar to that of the transcriber of Buchanan's manuscript and “identical with that on original drawings, which differs widely from that of Dr. Buchanan himself, as shown in his personally kept Journal.”

The ultimate fate of Buchanan's manuscript notes and drawings is a matter the history of which is also of much interest. His earlier botanical notes and drawings had gone to

the persons elsewhere noted, others as we have seen were deposited by him in the India House, and still others were left in India. However, it is reasonably certain that all his notes and drawings existed in duplicate. These, after the fashion of notes made by many scientific men today, may possibly have consisted of rough notes and drawings made in the field and of more finished and permanent ones intended for preservation. At any rate there were duplicates made.

We first learn of these in the preface to the volume on Dinajpur published along with "Gleanings in Science" by Herbert at Calcutta in 1833 (see this later). In the preface to this volume, which seems entirely unknown to all students of Buchanan's work (including Hunter and Day), we read on p.vi of the preface that:

"The original records [of Buchanan's exploratory work in Bengal], occupying twenty-five folio volumes in manuscript, were transmitted by the Indian Government to the Honourable Court of Directors, a copy of the whole having been previously made and deposited in the office of the Chief Secretary at Calcutta. Duplicates of [all] the drawings and maps, however, were unfortunately not preserved with the rest, probably from the difficulty at that time of getting them executed in India. It is a matter of surprise and regret that these valuable documents were not given to the public when stamped with the interest of originality and immediate applicability to the actual circumstances of the districts, and when they would have proved of great utility to the public officers of Government."

These volumes of manuscript notes and drawings seem to have been put in charge of the Asiatic Society of Bengal to be published in its *Journal* as the successor and continuation of "Gleanings in Science," in connection with which the Dinajpur section had appeared. (This, however, was never done, it may be said parenthetically.) Actually and physically they were in the Library of the Botanical Garden at Calcutta, to which they had been transmitted by Buchanan before his departure in 1815 as noted above.

McClelland (1839) had heard of these drawings but had supposed them to be the originals of published figures and had paid little attention to them. However, in 1836, while finishing his monograph on the "Indian Cyprinidae" he made inquiry about them and received from Dr. Wallich a collection of 150 beautifully done and for the most part unpublished drawings of fishes with their specific names written on the margins in Buchanan's own handwriting, so that there was no difficulty found in referring them to descriptions in the 'Gangetic Fishes.' Further investigation at the Botanical Garden in 1838 brought to light two other folio volumes of drawings on general zoolog-

ical subjects consisting of 5 species of Simiadae, and 1 Ursus, 6 Cervidae, several Muridae, an Ichneumon, a Hystrix, 3 Caproidae, several Tortoises, 2 Flying Foxes, 2 Lacertae, 2 Paradoxuri, and 285 birds.

Summing up, McClelland says of these drawings—"all of which, in addition to the fishes, are drawn in duplicate, thus amounting to about 900 drawings." In addition McClelland found that two quarto volumes of Buchanan's zoological manuscripts (relating to these figures we may conjecture) had been retained in the Botanical Garden since 1815. Thus all this work was lost to the world and our author deprived of its credit, while other men were refiguring and redescribing these animals.

Just here an apparent discrepancy may be cleared up. The preface of the 1833 Dinajpur volume refers to 25 volumes of Buchanan's manuscript transmitted to the Court of Directors, a duplicate set being left with the Indian Government. Elsewhere in this paper reference is made to 21 folio manuscript volumes plus 7 of statistics. Now McClelland speaks of 2 manuscript volumes of fish drawings and of 2 other volumes of drawings of general zoological subjects, making  $21 + 2 + 2 = 25$  as stated in the Dinajpur volume. This seems to be in error, however, in saying that duplicates of *all* the 25 volumes were sent to England. For as we shall see later, not all the drawings in these 4 volumes had duplicates in England.

Cantor (1849) says on the vexed subject of Buchanan's fish drawings: "They consist of 144 coloured figures of fishes executed by native painters, and they form a portion of the series of Zoological Drawings which on Buchanan Hamilton's departure from India were deposited in the Library of the Honourable Company's Botanic Gardens, Calcutta."

Cantor quotes Griffith (1843) that these drawings consisted in 1843 of 144 fishes, 19 reptiles, 349 birds, and 36 quadrupeds. Griffith then adds, "For many of the originals, copies appear to have been substituted. There are in addition 18 folio sheets containing copies of some of the drawings of Fish executed apparently in Dr. Wallich's time. Of Birds, etc., there are also similar duplicate copies 22; and of unfinished and unnamed 14."<sup>1</sup>

Next we hear of Buchanan's fish drawings in 1869 when Dr. Günther says in a footnote on page 127 of the Zoological Record that "... those drawings exist in triplicate, one copy being in the British Museum where their free use is allowed." Unfortunately he does not give his authority for this state-

<sup>1</sup> I regret that I have been unable to find in this country a copy of Griffith's "Report," and hence have had to quote him from Cantor's account. Griffith was Director of the Calcutta Botanic Gardens from 1842 to 1844, during one of Wallich's absences.

ment nor does he state where the third set may be found. Possibly the set in the British Museum (which seems to be incomplete) was that used by Buchanan in illustrating his 'Gangetic Fishes', and was the third, the other sets being in India House and in Calcutta.

Cantor (1849) says in his preface (p. xi) that Valenciennes had through Horsfield access to Buchanan's drawings in the Library of the East India House, London. However, on p. vi of the 'avertissement', of vol. IV of Cuvier and Valenciennes, we read that while Horsfield showed Valenciennes Finlayson's drawings of Siamese fish in the East India House, Gray showed him in the Hardwicke Collection the Buchanan drawings of fishes described but not figured in the 'Gangetic Fishes.'

For the major part of our knowledge of the fate of Buchanan's scientific remains we are indebted to the initiative of Francis Day. In 1871 he examined the folio volumes of drawings and manuscripts of Dr. Buchanan on deposit in the library of the Asiatic Society of Bengal in Calcutta. In two of these he found "one hundred and forty-nine original coloured delineations of fish and forty-five copies." And he quotes McClelland (who knew Buchanan's writing well) that on the former "the specific names in Dr. Buchanan's handwriting [are] marked under the figures, so as to leave no doubt or difficulty in referring them to corresponding descriptions in the 'Gangetic Fishes.'" McClelland, it will be recalled, in referring to these, says that he also found 2 quarto volumes of manuscripts, but Day, however, makes no mention of these.

#### USES MADE OF BUCHANAN'S DATA.

Having given all the information obtainable as to the fate of Buchanan's collections, manuscript notes, and drawings, let us now take up an investigation of the use made of his various data, particularly that relating to fish and fisheries.

In 1822, Buchanan published at his own expense his 'Gangetic Fishes' under the following title: "An Account of the Fishes found in the River Ganges and its Branches. By Francis Hamilton (formerly Buchanan) M.D., etc. With a Volume of [59] Plates in Royal Quarto. Edinburgh, 1822." 4.<sup>o</sup>? This work comprises 405 pages, describes 269 species of fishes, and is illustrated by 97 figures. Many of these figures, however, are in duplicate—i.e., there will be a beautiful drawing of the fish on stone in lateral view, and next and bearing the same number an outline sketch showing the fish from above. Hence the total number of drawings is much greater—173 in all.

Now comes the question as to the drawings used in the plates of the 'Gangetic Fishes.' Certainly the nucleus was composed of drawings belonging to him personally. While at

Lukhipur and Baruipur in 1796-1800, he had drawings made of the fishes. Chaudhuri (1918) quotes a letter from Buchanan to Roxburgh dated Nov. 30, 1797 :—" I have given my old painter a gold mohar a month and have him employed on fishes " Later, while in charge of the menagerie at Barrackpur in 1804-05, he continued his researches and had drawings made—presumably at his own expense (Chaudhuri).

Whether Buchanan had had drawings made for every species of fish studied in Bengal is a matter of conjecture. But he certainly had great numbers made and it is equally certain that, while he made use of some, he did not have access to all. Of this we have his own testimony. On pages 315-316 of his " Fishes of the Ganges " in speaking of *Cyprinus titius*, he says:—" in the north-east parts of Bengal, I saw another fish called by the same [native] names, and procured a drawing, now in the possession of the Bengal Government . . . therefore until I recover the drawings I cannot give the fish a specific character." As further evidence of the fact that he was not permitted to use all his drawings, it may be stated that while he described 80 species of the family Cyprinidae, he only figured 21.

On this point McClelland speaks explicitly (1839) when he says that in 1836 he found in manuscript collections in the library of the Botanical Garden at Calcutta 150 beautifully executed drawings of fishes of which 52 alone were unpublished figures of Cyprinidae. Later Day (1871), as we shall see further on, found 146 figures and 48 duplicates, of which at least 124 had not been utilized in the " Fishes of the Ganges." These 124 unutilized figures, plus the 97 published bring the count up to 223 known figures out of 269 species described.

But not only was Buchanan deprived of the use of the greater number of the drawings of the fishes of the Ganges, but it is evident that he did not have at hand all his notes made during his survey of the Bengal districts. This will be made clear to anyone who consults the Dinajpur volume or Day's papers (1873 and 1877), wherein are contained data not found in the ' Gangetic Fishes.' On this point Day again explicitly says (1878): " He appears to have been refused access to his original MS. report, when he desired to publish at his own cost, the ' Fishes of the Ganges.' " At the time that he wrote this work his report in 28 manuscript volumes was reposing in the India House, London, where it had been brought in 1816.

Now as to the further use of the data so laboriously collected by Buchanan and entirely withheld from complete publication, certain interesting facts may be given. First of all I have found that some use was made of various miscellaneous data in papers by C. Mackenzie and Henry T. Colebrooke in the Asiatic Transactions between 1807 (vol. 9) and

1816 (vol. 12). Also there is a short paper by Buchanan himself in "Gleanings in Science," 1832, vol. iii, pp. 1-8. The first extensive use, however, was by Hamilton, as noted next.

In 1820, Walter Hamilton published at London his "Geographical, Statistical, and Historical Description of Hindostan and the Adjacent Countries" in 2 vols. 4<sup>o</sup>. In this work of solid worth, Hamilton says that his purpose was to reduce the geography, etc. of Hindostan to a more definite and systematic form than had been done before. On page x of his preface in his vol. 1 he says that he has drawn almost exclusively on the manuscript records deposited at the India Board, and very largely upon Buchanan's 25 manuscript folio volumes in which he found the latter's task "executed with such singular ability and success," that he greatly regretted that it was not immediately published since Buchanan's report were "models for future investigations of a similar nature." Throughout his work he constantly quotes our author, giving him the fullest credit. However, the data printed on fish and fisheries is very abbreviated and of little value.

During the years 1830-34 John Edward Gray brought out in London in 2 large folio volumes "Illustrations of Indian Zoology; Chiefly selected from the Collection of Major-General Hardwicke," consisting of 202 coloured plates without any text or even preface. Among the other animals portrayed are 10 turtles and one *Paradoxurus*, all drawn or lithographed (with one exception) by Waterhouse Hawkins, and labelled "From Dr. Buchanan Hamilton's Drawings, India." In addition there are 77 species of fishes shown in 137 figures (see explanation above of two figures to a fish) without any indication of their origin. However, McClelland in his "Indian Cyprinidae," made a careful comparison of these figures with those found in the library of the Calcutta Botanical Garden and found that 2 species in 37 figures were copies of Buchanan's figures on deposit there—all of which I have verified by comparing the 'Illustrations' and Day's list to be referred to later. And these drawings were used without giving Buchanan a word of recognition. On this point, Day in the preface (p. iii) to his "Fishes of British India" (1878) writes: "The late Dr. J. E. Gray observed (in a letter to myself, dated January 19th, 1872). 'Hamilton and Hardwicke were great friends, and he allowed his artist to make copies of all his fishes from Mysore and other drawings for General Hardwicke, in whose collection of drawings now in the Museum they are to be seen. Mrs. Gray engraved a large number of the small unfigured species from that series but they have not been published.' I may add that I obtained a set of these figures along with some of the late Dr. Jerdon's MSS.; these are six 4to. plates containing 46 figures." A large number of the Hardwicke's figures it should be noted are, however, reproductions of

the Calcutta manuscript collection over which Buchanan had no control.

Concerning these unacknowledged or "pirated" figures of Hardwicke's, McClelland notes that the colours are exaggerated in some cases, wrongly shown in others, omitted in still others, while Buchanan's erroneous names are retained in some cases and names and drawings changed (criss-crossed) in others, and finally remarks are added lacking in the original drawings.

The next work to contain Buchanan's material is curiously enough an almost unknown book bearing his own name, a work of which both Day and McClelland make no mention although it was published in Calcutta. This is "A Geographical Statistical, and Historical Description of the District or Zila, of Dinajpur, in the Province, or Soubah of Bengal. By Dr. Francis Buchanan's Buchanan (Hamilton), Calcutta, 1833." 8°. This, which is a verbatim copy of Buchanan's report on Dinajpur, was published posthumously with the issues of the "Gleanings in Science."

This publication was arranged for by Capt. J. D. Herbert, editor of the "Gleanings," with a view to securing circulation free of postage in the territories of the East India Company for his journal, the *quid pro quo* to the Company being found in the stipulation that he published from time to time "valuable public documents having reference to public utility." This was done to the extent of completing the report on Dinajpur but without any illustrations. The copy supplied was apparently a duplicate one, for in the preface to vol. I of the "Journal of the Asiatic Society of Bengal" (1832) (the successor of the "Gleanings") it is stated that "the drawings alluded to [as not yet published] are in possession of the Honourable Court of Directors, along with the original manuscript." In the preface to the Dinajpur volume it is stated that the types were set up from the duplicate manuscript text, and that the references to the figures as set by Buchanan were retained, so that in case the Government should ever decide to publish the illustrations, these could be added to the published volume or if bound separately the references would still apply.

At first I presumed that these Dinajpur data were published in the "Gleanings," but inspection of the three volumes of this journal shows their absence, and in the preface to volume I of the "Journal of the Asiatic Society of Bengal" it is stated that these were "printed in detached form" and as such sent to the subscribers of the "Gleanings" and to others. In 1833, the separate issues in parts of the Dinajpur report were collected and bound in volume form with the title page given above. Fish and fishing are found on pages 137-145, 64 species of fishes being listed.

Just here it must be explained why this publication was not continued. In 1832 the "Gleanings in Science" had its name changed into "Journal of the Asiatic Society of Bengal" under the editorship of James Prinsep, although the Asiatic Society was in no wise responsible for it. In the preface to volume II of the Journal we learn that a second volume of Buchanan's notes was begun and 50 pages and 3 plates printed, and that the Government had placed in the editor's hands the remaining volumes of Buchanan's manuscripts with "an intimation of its desire that the printing of these records should be continued." However, a notice from Government, dated December 2, 1833, was later received, withdrawing the free-of-postage privilege after June 1 following, but giving no explanation whatever. This seems to have put an end to the printing—at least I have not been able to find that anything further was done. Such are the vagaries of Government.

Chronologically, next in order, we find Buchanan's material utilized by Montgomery Martin in the preparation of his three volume work entitled "The History, Antiquities, Topography, and Statistics of Eastern India; comprising the districts of Behar, Shahabad, Bhagulpoor, Goruckpoor, Dinajpoor, Puraniya, Rungpoor and Assam..Collected from original Documents at the East India House, London, 1838." The original documents were mainly Buchanan's manuscripts. These were examined by Martin and found to be so valuable that he sought permission to place them before the British public. This granted, he prepared his book directly from the manuscripts, making no change in the arrangement of the surveys, reproducing some of Buchanan's original drawings, and in large part retaining Buchanan's very language. I have compared the Dinajpur section with Buchanan's Dinajpur book of 1833, and find it an almost verbatim copy. While Martin gives Buchanan the fullest credit, the book is so nearly an exact reproduction of Buchanan's work, that its title should, in my judgment, read "The History, Antiquities, etc., of the Districts of Behar, etc.! by Francis Buchanan edited by R. Montgomery Martin." Here again, however, the fishes and fisheries are so briefly referred to as to make the reference of no value.

The next man to utilize Buchanan's material was McClelland in the preparation of his "Indian Cyprinidae" (1839). After labouring for about three years and at times almost in despair to identify the unfigured Cyprinidae in the 'Gangetic Fishes,' he finally succeeded. Furthermore, he had had two series of finished (coloured) drawings made of these Cyprinids, when, hearing of drawings by Buchanan in the library of the Botanical Garden, he examined them and found among them 52 unpublished drawings of Cyprinidae of the 'Ganges' McClelland used 39 of these drawings giving Buchanan the

fullest credit, his name appearing on every plate which includes one of his figures.

Not only had Buchanan been unable to make use of these figures in his 'Gangetic Fishes,' but for 22 years they had lain hidden, and McClelland had gone to the time, trouble and expense of identifying Buchanan's unfigured Cyprinidae (which would have been made easy by the use of the figures) and had also had these refigured. One hardly knows how to characterize so culpable a situation.

Just here is the place chronologically to clear up a long obscure point, namely when were these drawings and notes transferred from the Library of the Botanic Garden to that of the Asiatic Society. For a long time I thought that this had been done when the manuscripts were put into the hands of Herbert and of Prinsep for publication, but this was negatived by McClelland's statement that in 1838 he saw the drawings at the Botanic Garden. However, the matter is cleared up on the authority of Cantor who says that "Mr. [Wm.] Griffith while superintending the Botanic Gardens transferred these drawings to the Library of the Asiatic Society, Bengal," in 1842 or 1843.

Day has done more than any one man to make use of Buchanan's literary remains. In 1871 he examined the drawings in the Library of the Asiatic Society at Calcutta, with the following results.

He listed by number the drawings in the volume marked IV and gave the unpublished names written on them by Buchanan. He then went to the great trouble of identifying them according to the determinations of species in the "Fishes of the Ganges," and the "Catalogue of Fishes in the British Museum." Next he identified these drawings with the published figures in the 'Gangetic Fishes,' in Hardwicke's 'Illustrations,' and in McClelland's 'Cyprinidae.' And lastly he added some notes of his own to the list in the article, while on the drawings themselves he placed the numbers used in his list.

There are 146 (not 144 or 149 or 150) figures in his list, of which Nos. 70 and 71 are duplicates of No. 64, *Mugil bogon*, an undescribed form. In passing it may be remarked that No. 128 is *Cyprinus titius*, to which Buchanan refers on page 317 of the Ganges Fishes as being in possession of the Bengal Government.

I have been at the trouble to analyse Day's list of 146 drawings with the following interesting results: as noted above 2 drawings are duplicates of a third; excluding these 2, there are 9 other drawings of fishes never described, and the drawings never published; 24 only of these drawings were used by Buchanan in the "Fishes of the Ganges"; 17 were reproduced in Hardwicke's "Illustrations," and 2 others were deposited with the Hardwicke collection in the British Museum but never reproduced; McClelland utilized in his work 39 figures of

Cyprinidae out of 52 found ; this leaves 53 figures as yet remaining unpublished anywhere.

In another volume Day found 48 drawings of fishes, all of which are duplicates of the preceding except 4. One of these has been reproduced in the Hardwicke volume, one is a duplicate of which the original has been lost, and only one of the four has had the fish described in the 'Ganges Fishes.' The duplicate, of which the original is lost, was reproduced as to its head and dorsal fin by Günther in 1872, and the same ichthyologist in 1871 had reproduced the figure of *Cyprinus batu*, No. 114 of Day's list above.

As has probably been noted, there are some discrepancies in the counts of these drawings. McClelland says that there were 150 sent him by Dr. Wallich. Day (1871) reports first of 149 drawings and 45 copies in 2 manuscript volumes, but he lists 146 in vol. IV and 48 in vol. I, and later says: "This volume IV contains 50 coloured illustrations of fish." Again (1877) Day speaks of four volumes of drawings which were never transmitted to England and notes that two of these contained 149 drawings and 45 copies. Day's 149 drawings plus 45 copies equal 194 numbers. Analysed, there are 146 originals in one volume plus 3 originals and 45 copies, in another volume, altogether amounting to 194 pieces.

In 1873 Day announced "that the long missing papers of Dr. Buchanan on natural history have at last been discovered, and that I have been permitted to take copies of those relating to the ichthyology of Bengal." These were the 28 manuscript volumes taken to England in 1816 and brought back to India in 1873, as we shall see later. He then published (1873) a note based on these manuscripts, correcting a number of errors in the "Fishes of the Ganges." The great pity is that for nearly 60 years these notes and drawings had been hidden in government archives to the great loss of credit for Buchanan and of valuable data for ichthyology.

For the final knowledge and use of the large amount of data collected by Buchanan in his Bengal survey we are indebted to Hunter and through him Day. In 1869, Dr. William Wilson Hunter, having been made Director-General of Statistics to the Government of India, was directed by the Governor-General of India to prepare a statistical account of Bengal. In preparation for this work he carried back to India with him the 28 manuscript volumes of Buchanan's notes elsewhere referred to. The magnificent outcome of Hunter's work was the 20-volume "Statistical Account of Bengal," London, 1875-1877. In preparing this, Buchanan's work was constantly used against which to check the progress of 60 years in those parts of India which he surveyed in 1807-1814. These manuscripts brought from London were submitted to Day in 1873 with the request that he look into them to ascertain how the fresh-water fisher-

ies were carried on in the early 1800's as well as how the coloured figures in the Calcutta collection were referred to. This Day did with alacrity and at once published (1873) a preliminary report, saying in part: "I was quite unprepared to discover that his manuscript notes on fishes, which have now lain upwards of 60 years in the Government Archives, contain many remarks and much information not existing in his work [i.e., the 'Gangetic Fishes']. These papers, in fact, form the key to the unpublished drawings, and several errors in the 'Fishes of the Ganges' may now be corrected from the author's own notes."

Later (1877) Day published (with suitable introductory and concluding sections) *in verbatim form* Buchanan's "Fish and Fisheries of Dinajpur" with 64 species, Rangpur with 126 species, Purniah with 134, Bhagalpur with 76, Behar and Patna with 62, Shahabad with no list<sup>1</sup> and Gorakhpur and North-West Provinces with 79: a total of 541 species listed, many of which are of course duplicates (identical species). Buchanan gives for these fishes the native name followed in some cases by the scientific name transliterated into French, as "Vagari, Pimclode." To these he frequently adds notes as to the habits, properties, identity with fish found in other districts, or other data relating to the fishes. In a series of footnotes Day identifies each fish with the corresponding one in the "Fishes of the Ganges" and in the unpublished manuscript drawings which he found in Calcutta. Occasionally he adds notes of his own, but these are always set in the footnotes.

Thus the greatest student of Indian fishes has sought to give due credit to the pioneer student of its fresh-water piscine fauna, a credit denied him for nearly two-thirds of a century, to the great loss of Indian ichthyology. It should be noted in passing that Day found in 1877 that a number of drawings seen by McClelland in 1838 had disappeared and that others had been damaged by termites. It would be a valuable contribution to the history of Indian ichthyology if some of the able students of this science in Calcutta would see if these drawings are still in the library of the Asiatic Society of Bengal, would inspect them and would publish the facts. Thus possibly there might be cleared up the discrepancies in the count of the volumes of manuscript and of the number of drawings, as well as of the matter of the handwritten names on the margins of the latter—said to be Buchanan's by McClelland (1839), but stated for some drawings to be that of another by Günther (1872) and also by Day himself (1877).

<sup>1</sup> Buchanan explains the absence of a list for Shahabad as due to the fact that while surveying that district he had no fixed abode (where specimens could be stored), and further that these fishes were the same as those found in Patna.

With regard to the grievous wrong done to both Buchanan and Ichthyology by the long withholding of the scientific results of his exploration of the Bengal presidency, I cannot do better than quote McClelland (1839) who with a very exact knowledge of the situation wrote as follows :—

“Had such an injury to the advancement of information resulted from an oversight in an ordinary public office, the circumstance would excite less surprise; but that the works of a naturalist should be so treated in a public Institution expressly intended for the promotion of science, is so unaccountable to me, that I cannot presume to express an opinion on the subject. But as the case stands, perhaps the best remedy that can now be applied in justice to Buchanan, as well as to others who are still engaged in scientific pursuits, would be to give a complete edition of his labours, botanical and zoological, to the public; at the same time it is right to say that no atonement can now make amends for the injury that has been inflicted on Buchanan as a naturalist, or for the time that has been lost in allowing others to go over unnecessarily the ground which he investigated, instead of beginning where he left off.”

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16. The Adhesive Apparatus on the Toes of certain  
Geckos and Tree-frogs.

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(Communicated with the permission of Director, Zoological Survey  
of India.)

While recently engaged in the study of the adhesive apparatus of the fish and tadpoles of mountain torrents and of the mechanism of adhesion of the cephalic disc of *Echeneis* or its allies *Remora*, I noticed great similarity in outward form between the digital discs of our common house Gecko (*Hemidactylus flaviviridis*) and the so-called "sucker" of the "sucking-fish." After going through the literature I found that the adhesive pads of Geckos have received sufficient attention and that various theories have been advanced to account for the property of adhesion possessed by them. With a view to study the validity of the various theories, I have made observations on living and freshly-killed Geckos. The minute structure of their adhesive pads has been thoroughly studied from earlier accounts and from specially prepared preparations in order to elucidate the same problem. The finger-discs of the tree-frogs have also been similarly examined and a note on their probable mechanism is given towards the end of this paper.

I am greatly indebted to my colleague, Dr. Baini Prashad for translating certain papers in German into English for me. Dr. N. Annandale has gone through the manuscript with me, for which my best thanks are due to him.

Before passing on to the observations on the mechanism of the finger-pads of Geckos, I propose to give a short account of the structure, both macroscopic and microscopic, of these organs. For a detailed account of the same reference may be made to W. J. Schmidt's<sup>1</sup> paper on the integument of the Geckos. In the same place will also be found all earlier references on the subject.

A pad of *Hemidactylus flaviviridis* consists of a number of paired lamellae which run parallel to one another. Both at the anterior and the posterior end of the pad there are a few unpaired lamellar pieces. The lamellae are regarded as modified scales and as such show great similarity in their

<sup>1</sup> W. J. Schmidt, *Zool. Jahrb. Anat. Abt. Jena*, XXXVI, pp. 377-464, pls. xxxiii-xxxvi (1913).

arrangement to the scales on the under surface of the corresponding digit. At the end of each finger there is a strong, recurved claw. The arrangement of the lamellae and the shape of the adhesive pads is different in different genera of Geckos<sup>1</sup> but the main feature, e.g. the ridge-and-groove pattern appears to be shared by all of them, or at any rate by all of those genera in which an adhesive apparatus is present on the digits. From the histological account of the disc published so far it appears that the minute structure of the lamellae is more or less similar in almost all Geckos. In a transverse section each lamella is found to consist of four chief elements from outside inwards, (1) a horny layer beset with innumerable, branching, setose processes and resting on, (2) a layer of few tiers of elongated horny cells, (3) the third element consists of large rectangular cells, with developing setose processes in the outermost layer. These are the mother-cells of the setose processes of succeeding generations, (4) the last layer is the stratum malpighii. The outermost layer bearing setose processes is periodically cast off and even in the laboratory it can easily be removed with a needle.

The vacuum theory of the adhesive action of the pads of Geckos held sway till 1902 and it was commonly believed that "small and numerous vacua" were produced in between the lamellae. The explanation, as can readily be seen, was similar to that advanced for the adhesive property of the cephalic disc of *Echeneis* or its allies. In the case of the fish the raising of the usually recumbent lamellae was attributed to the muscular action on the part of the animal, but in Geckos the creation of a series of vacua is accounted for by Gadow<sup>2</sup> in the following manner: "The pressing down of the foot upon a smooth surface causes the lamellae to spread asunder and to drive out the air; partial retraction lets them return to their original position by virtue of their elasticity; and little vacua are produced." The same author has, however, attributed a small portion of adhesion to the horny, setose processes described above, for he says that "each lamella is further beset with tiny hair-like excrescences, which secure adpression to even the slightest irregularities of surface and at the same time enhance the elasticity of the pads." In 1902 Dr. Weitlaner<sup>3</sup> made extensive observations of great value on *Hemidactylus platyurus* at Singapore. By subjecting the discs of this lizard both in the living and the dead animal to various tests, Dr. Weitlaner came to the conclusion that pure suction, at any rate, was not the only cause of adhesion. Though this author negatived the suction theory so ably,

<sup>1</sup> Boulenger, *Faun. Brit. Ind. Rept. Batrachia*, pp. 80-106 (1890).

<sup>2</sup> Gadow, *Cambridge Nat. Hist.* VIII, p. 505 (1901).

<sup>3</sup> Weitlaner, *Verhandl. zool.-bot. Ges. Wien*, III, p. 328 (1902).

he had no alternative suggestions to make to account for the adhesive action of the foot of the Gecko.

Kunitzky<sup>1</sup> in 1903 after dealing with the anatomy of the pads of *Ptychozoon homalocephalus* pointed out two possibilities regarding the function of these pads, (1) the vacuum theory, which he himself dismissed with the remark that when after being pressed flat on the opposing surface the lamellae were raised again, there was no mechanism to prevent air from going in again, (2) the pressing of the lamellae against the opposing surface in such a way that the whole of the air was pressed out from between the lamellae. Under these circumstances according to the author the pad would stick by the sheer force of the atmospheric pressure. He has further described an elaborate mechanism by which the air between the lamellae could be pressed out. According to him a number of blood spaces found below the cutis and communicating with one another performed this function by regulating the flow of blood in them. When blood flows into them, they become distended and press the grooves on the pad so that the whole of the pad becomes even and smooth and the air is pressed out. On the other hand when blood flows out of them, the irregularities appear again on the under surface of the pad and air is thus let in. The author has, however, attributed a portion of this action to a muscular effort on the part of the animal.

In 1904, H. R. Schmidt<sup>2</sup> also doubted the vacuum theory and suggested that adhesion was brought about by the electrification of the setose processes when the pad rubbed against an opposing surface. Unfortunately I have not been able to consult his paper, but from its short synopsis as given by W. J. Schmidt (*loc. cit.*) I have been able to follow his chief arguments. The short synopsis runs: "H. R. Schmidt sieht das wirksame Prinzip der Anheftung in den Borsten selbst. Da eine Wirkung des luftverdünnten Raumes auszuschliessen ist, bleibt ihm nur die Annahme, dass bei der innigen Berührung der Tausende von Kleinen Endflächen der Borsten mit der Unterlage ebenso viele elektrische Doppelflächen gebildet werden, auf welche letzten Endes das Haften der Zehen zurückzuführen wäre." W. J. Schmidt (*loc. cit.*, 1913) after alluding to the views of the previous authors concludes that the true significance of the action of the pads of the Geckos still awaits solution.

I propose to give here a brief account of my own observations on both living and freshly killed specimens of

<sup>1</sup> Kunitzky, *Bull. Acad. Imp. Sci. St.-Petersbourg*, XVIII, p. 22 (1903).

<sup>2</sup> H. R. Schmidt, *Zur. Anatomie und Physiologie der Geckopote*, *Züricher Diss. Jena* (1904).

*Hemidactylus flaviviridis*. It may, however, be pointed out that some of these are mere repetitions of those already made by Weitlaner (*loc. cit.*). Towards the end I will discuss the various theories of adhesion in the light of my observations and will conclude by pointing out my own views on the subject. The observations on living specimens were made by keeping the animal in a glass dish with a smooth glass cover on it. A portion of the cover was occasionally lifted to renew the air inside the dish.

My observations are as follows:—

(1) It was observed that the Gecko could conveniently stick to a smooth, vertical surface. When in motion on such a surface the whole of the weight of the body was supported by the digital discs, but when at rest, the limbs were stretched outwards and the belly was pressed against the opposing surface. Under these circumstances, it so appeared, that a part of the weight of the animal was supported by the belly.

(2) It was found that the adult Gecko could not hang from a perfectly smooth surface back downwards. A young individual about 30 mm. in length without the tail was, however, able to suspend itself back downwards from a smooth surface. In this condition its belly was pressed against the smooth surface and its limbs were stretched considerably outwards. It was found on irritating this young animal that it was not able to move about freely in this position since almost every attempt at movement on the part of the animal resulted in a fall.

(3) The above experiments were repeated by substituting a piece of blotting paper for the glass cover and it was found that both adult and young Geckos were able to move about freely along the rough surface of the paper back downwards.

(4) The claws from all the fingers were removed from a living Gecko and it was then subjected to the above described experiments. The behaviour of the animal against smooth surface was similar to that described in 1 and 2, but against rough surfaces, such as a piece of blotting paper, it was totally different. The animal under these circumstances was not able to climb up even a vertical rough surface.

(5) It has been found that even a single claw of the animal is sufficiently strong to bear the whole of its weight, provided that the claw had previously taken a firm hold on the opposing surface.

(6) It was observed that the pads on the fingers of the Gecko were not quite so efficient on vertical smooth surfaces, which had been wetted, for the animal was found to slip even on those which had an inclination less than a right angle.

(7) Considerable friction was felt below the pads when the animal was drawn backwards by the hand, but when it

was lifted vertically upwards or was drawn forwards very little adhesive power was apparent in these structures.

(8) A dead Gecko with all its claws removed could be made to adhere to a vertical, smooth surface even with the help of the digital discs of one foot. But when the cuticular layer bearing setose processes was removed from the lamellae of a foot, it lost its adhesive properties to a very great extent.

Even from a cursory perusal of the above observations it is clear that in the foot of the Gecko there are two distinct types of clinging organs, (1) the claws are functional when the animal progresses or hangs from a rough surface, and (2) the digital pads help the animal in climbing smooth vertical surfaces. The fact that a Gecko with all its claws removed can run up a smooth vertical surface just as easily and efficiently as with the claws, and that the same animal cannot climb up a brick wall clearly proves my contention. The grasping power of the claws is too well known among lizards to need any discussion here. It is with the action and function of the pads that we are chiefly concerned. It may, however, be pointed out that both types of clinging organs found on the foot of the Gecko are in constant use, but the relative efficiency and usefulness of each depends upon the nature of the opposing surface. It follows from the above argument that when a Gecko sticks to a surface which is neither very rough nor very smooth both types of clinging organs are equally in evidence.

Before passing on to the discussion of various theories regarding the mechanism of the digital pads of Geckos, I think it proper to explain here a marvellous feat of our house Gecko which has given an erroneous idea of the suction theory of the pads. It is known that a Gecko can run along an apparently smooth, white-washed ceiling back downwards, but such a ceiling is not really so smooth as a piece of glass is. It is clear from the above observations that such a feat is only possible against a comparatively rough surface and that in its performance claws on the feet of the lizard are the chief organs of adhesion. But in spite of all this the feat seems to be fairly risky on the part of the animal. It is a matter of every day experience in tropical countries that Geckos often fall from the ceiling on to the floor or table. It appears, however, that the Geckos are amply provided for such mis-adventures. No sooner does a house-lizard touch the floor after a fall than it runs away, apparently none the worse. I have never seen a Gecko fall when climbing a wall, but can recollect at least a dozen instances when one fell from the ceiling on to the floor. Let us now pass on to the discussion of the various theories advanced to account for the adhesive property of the Gecko's foot.

(1) The suction theory has been very ably negated by Dr. Weitlaner. He has clearly shown by his experiments (such as placing long threads between the lamellae to avoid the creation of vacua and subjecting the animal to a vacuum, and finding in both instances that the pads acted efficiently as in normal circumstances) that a vacuum or a series of vacua have little to do with the adhesive property of the pads. Moreover, the facts that a dead animal (freshly killed) can be made to stick to a smooth vertical surface and that a wet surface renders the pad relatively inefficient, also point to the same conclusion. As has been demonstrated by Kunitzky there is no definite structure in the lamellar pads which could prevent air from entering between the lamellae when they were raised after having been pressed flat against an opposing surface.

(2) The adpression theory of Kunitzky, which chiefly rests on the action of certain blood spaces, is directly negated by the fact that a dead animal in which these blood changes are not conceivable, can be made to stick against a smooth vertical surface. The structure of the pad clearly shows that the deep grooves between the lamellae cannot easily be filled up by the distension of internal blood spaces. It can, moreover, be readily seen in the foot of a Gecko clinging to a vertical glass surface that the grooves between the lamellae are open at both ends and that they are fairly deep and spacious.

(3) H. R. Schmidt's theory of the electrification of the setose processes by rubbing against an opposing surface is rather imaginary than practical and does not bear close scrutiny.

My own views regarding the adhesive action of the pads are similar to those already advanced to account for the adhesion of the cephalic disc of *Echeneis* and of the striated apparatus found on the under surface of certain fish of mountain torrents.<sup>1</sup> In the ridge-and-groove pattern on the digital discs and in the presence of innumerable hair-like excrescences found on the lamellae I find mere mechanical frictional devices, which help to prevent the animal from slipping. The importance of the setose processes is apparent from the histological study of the pad, for we find several layers of cells whose only function is to produce these processes and to replace them as they are worn out. The same fact is clear from observation 8 recorded above. The feeling of stickiness, which is caused by the typically padded adhesive digits when a Gecko hangs from one's finger, is probably due to the clinging action of the setose processes. Friction depends

<sup>1</sup> Hora, *Nature*, p. 668 (May 19, 1923); *Rec. Ind. Mus.*, XXV, pp. 587-591 (1923).

upon two chief factors the coefficient of friction and pressure. The coefficient of friction, as is apparent, is very high in the foot pads of Geckos, and, therefore, a slight pressure on the pads results in a very high value of friction. When an animal adheres to a vertical surface the weight of the animal itself causes pressure on the pads and makes them efficient. On the other hand, when a Gecko is made to hang back downwards from a smooth surface, the pressure is negative, and hence the Gecko falls down. In a case where the limbs are stretched outwards, the weight of the body instead of pulling the pads directly downwards causes them to slip along the smooth surface for a short distance before exerting a vertical pressure on them. It is due to this fact that an animal can hang from a smooth surface when its limbs are stretched outwards. The pressing of the belly against the opposing surface is directly correlated with the position of the limbs, and is probably an additional advantage, since its scaly surface must help in increasing friction. Advantage may also be taken of atmospheric pressure by adpression.

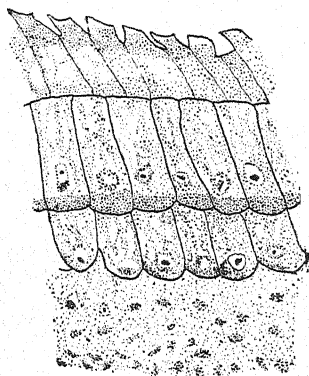
Observation 7 clearly shows that the digital pads are merely frictional devices.

The digital-pads of the house-lizard are in certain respects more highly specialized than either the thoracic apparatus of the fish of mountain torrents or the cephalic disc of *Echeneis*. Whereas in the fish the resulting friction under the pad is greatly enhanced by the pressure exerted by the flow of water, in the Gecko there is no such external aid. In short, in fishes both the coefficient of friction and the pressure play an almost equal part in the production of the necessary amount of friction, whereas in the house lizard the friction chiefly depends upon a very high coefficient of friction.

The finger discs of *Hyla* and of such Ranid genera as *Rhacophorus* and *Ixalus* consist of thick, cushion-like, almost rounded or elliptical pads of skin on the extremities of the fingers. Gadow (*loc. cit.*, p. 187) has pointed out that the disc "is furnished with unstriped, smooth muscular fibres, the contraction of which produces one or more longitudinal furrows on the under side." It is clear from this that under muscular action the plain finger disc is converted into a ridge-and-groove type of adhesive apparatus, the efficiency of which as a friction device has been explained in several places in my recent work (*loc. cit.*). A transverse section of the disc shows under a high power of microscope that the outermost layer consists of long columnar cells with their free margins arranged on the exposed surface as thick, closely set spines. In my opinion the ridge-and-groove pattern of

the disc and the presence of these spines account for the adhesive action of the finger pads of the tree-frogs.

Gadow writes, "Various suggestions have been made to explain the function of these discs. Suction, adhesion, and glueing-on have been resorted to. Suction, through production of vacuum, is quite imaginary and does not exist." According to this author the functioning of the discs depends upon adhesion, which, he says, is greatly enhanced by a sticky secretion from the glands of the animal. He further observes that "tree-frogs, when hopping on to a vertical plane of clean glass, slide down a little probably until the secretion stiffens, or dries into greater consistency. After a few days I find the glass-walls of their recently cleaned cage quite dirty, covered everywhere with their finger marks." I



Transverse section through a finger-disc of *Hyla annectans* (Jerdon):  $\times 487$ .

have not made any observations on living tree-frogs which would enable me to criticise the above statement, but on a careful study of preserved material a few points have occurred to me which are worth recording.

In the first place I can find no trace of glands in the finger-pads of *Hyla*. The accompanying figure clears this point. The fact that a tree-frog slides down a little when hopping on to a vertical plane of glass may be due to the time required for adjusting minute epidermal excrescences on the pads into corresponding irregularities on the opposing surface. I make this suggestion on the analogy of the Gecko, in which there are certainly no glands to secrete a sticky substance.

The second point observed by Gadow, that the recently cleaned glass-walls of the cage are rendered dirty in a few day's time, may prove no more than that these frogs soil their

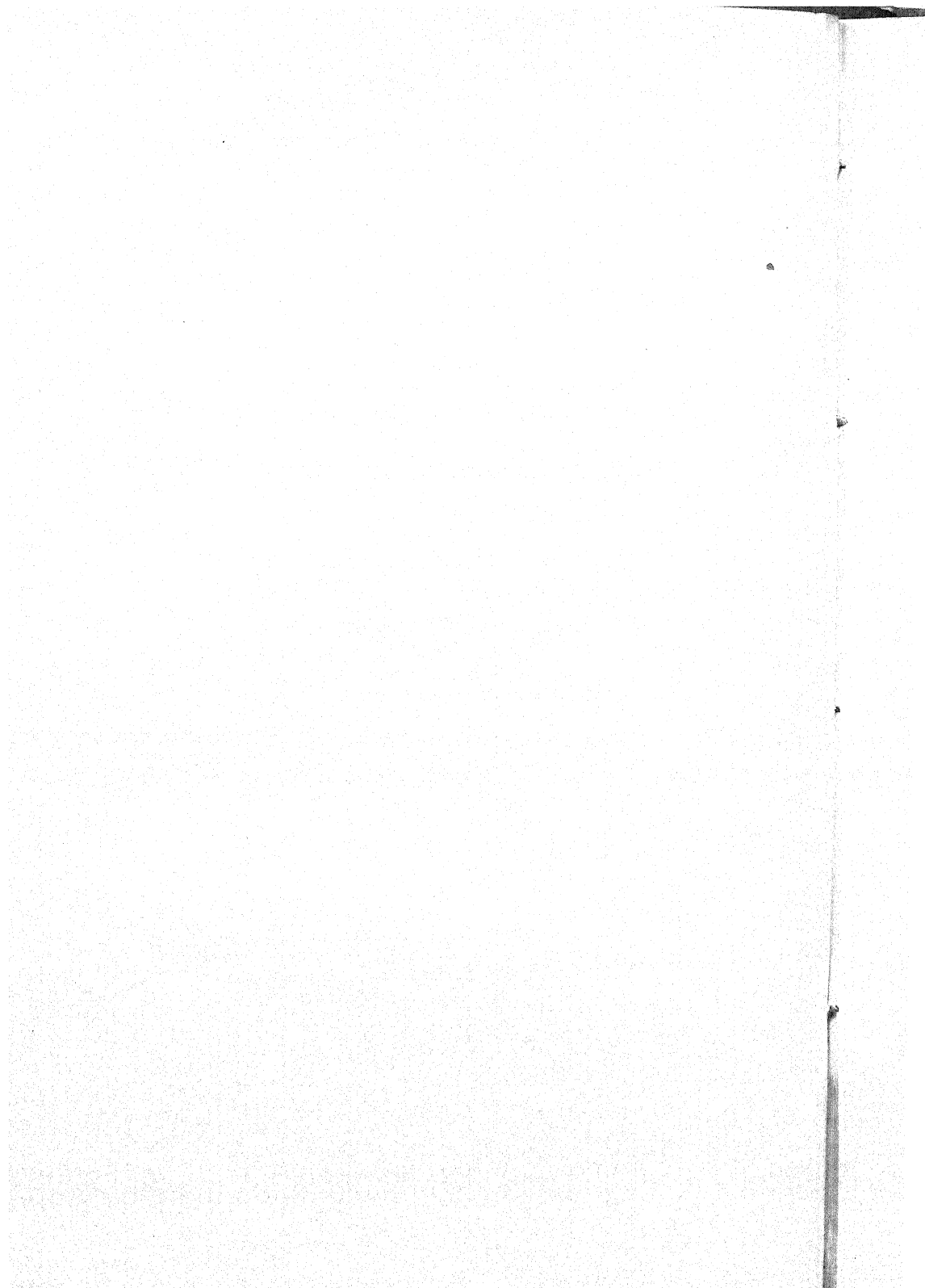
fingers with their own excreta or other substances and deposit this extraneous matter on the glass walls.

In any case the observations made by Gadow do not exclusively prove that the adhesion of the finger discs of the tree-frogs is due to the secretion of a sticky substance in the pad itself. There is moreover, no statement to the effect that the tree-frogs have been observed to exert any special effort in pulling their feet free when they jump away from a surface to which they have been adhering, as would be necessary if they were tightly glued to the surface by their finger-discs.

A somewhat similar phenomenon is illustrated by the heel-pads found in the nestling of certain birds which are reared in holes on the bare ground or in hollow trunks. "In moving about the nest-hole, particularly when wishing to move to the edge of the cavity the young bird does not use the toes, but pushes itself forwards by means of the rough surface of this heel-pad."<sup>1</sup> The heel-pads of birds are formed by the modification of skin, which is greatly thickened and "which is studded with obtusely conical tubercles." I believe that the nature of these pads will ultimately be found to be directly correlated with the type of nest which various species of birds select for their nestlings. I quote below from Mr. Chasen's account of the heel-pads of certain Malaysian birds which entirely confirms my views regarding the action of adhesive pads of Geckos and certain fishes. He writes: "Seth-Smith in recording the presence of well-developed pads in a young Toucanet (*Pteroglossus aricari*) remarks that the function is doubtless to enable the bird to climb up the side of the hollow cavity in a tree in which it is hatched, the pads forming, as it were, a second set of claws. The theory is supported by the fact that young parrots which have no well-developed tubercular pads are stated to use their beaks when moving about in their nest."<sup>2</sup>

<sup>1</sup> Günther, *Ibis*, p. 411 (1890).

<sup>2</sup> Chasen, *Journ. Malayan Branch Roy. As. Soc.*, I, p. 239 (1923).



17. Observations on the breeding of some Common Birds  
in the vicinity of Calcutta.

By SATYA CHURN LAW, M.A., B.L., F.Z.S., M.B.O.U.

In this paper I propose to record my observations on a few nests of four of our commoner birds discovered during February and March 1924 in the neighbourhood of Calcutta in the district of Twenty-four Parganas. These observations would show that the birds breed very much earlier than what is stated in the writing of accepted authorities.

*Oriolus luteolus luteolus* (Linn.).

In my wanderings for birds' nests I did not count on finding any nest of the black-headed Oriole in the month of March, for ornithological books do not indicate that month as its breeding season. In fact such ideas are scouted as unbelievable. In Hume's "Nests and Eggs" (Oates' edition, Vol. I, p. 360) a note is quoted from Buchanan Hamilton who says that this species "builds a very rude nest. \* \* \* \* \*". In March I found a nest with the young unfledged. Regarding this note Hume adds: "I confess that I believe this to be a mistake: neither season nor nest correspond with what I have myself seen about Calcutta. The nests, so far from being *rude*, are very neat." I might mention that the two volumes of MSS. notes by Dr. Hamilton, from which the above extract has been quoted, are preserved in the Library of the Asiatic Society of Bengal.

Now it happens that Nature has in her store many surprises for over confident authors and so, on the 9th March this year, in the village of Debandipore, a couple of miles to the north-east of Sodepur and about a dozen miles from Calcutta, I chanced upon a nest of *Oriolus l. luteolus* with three live (and lively) and unfledged youngsters: I lost no time in photographing this nest with the nestlings.

On the 30th of March, I discovered another nest of this species in a mango-tree in the village of Natagore-Krishnapur, a village between Agarpura and Baraset. The parental duties of the possessors of this nest were over and the younger generation had gone out into the wide world to seek their fortune.

Poor Dr. Hamilton, whose record had been so unceremoniously brushed aside by one stroke of the sturdy pen of Mr. Hume, appears to be after all right! What is more, Hamilton's description of the nest being rude appears to be also correct. Both the nests I have discovered are also rude, without the

neatness and compact finish which some people generally associate with the handiwork of this species and about which Hume was so positive. Though the characteristic ingenuity is there, both the nests lack finish and are rather clumsy.

The first nest was discovered on the 9th March with three newly-hatched chicks. Taking into consideration the period of incubation and the time taken to construct the nest, we may safely presume that the building operations commenced very likely in the middle of February and other preliminaries, e.g. courtship etc. took place earlier still.

The second nest which I brought away on the 30th, was found to contain, on the 27th, three fledgelings. The eggs of this nest must have been laid in the first week of March and the nest building operations, etc. must have taken place towards the end of February.

In the *Ibis* of 1894, p. 46, we have a contribution from P. W. Munn, "On the Birds of the Calcutta District", in which he speaks of having "shot a young of *O. melanocephalus* on April 13th," but as to the bird's breeding season he writes—"They usually have eggs at the beginning of May and June." These cases of mine, therefore, would be the earliest records of the breeding of *O. l. luteolus*.

I paid occasional visits to Debandipur to take photographs of the above noted first nest. During such a visit on the 23rd I found that one chick had disappeared and the other two had left the nest, which I brought away with the young ones. This nest was placed in the fork of a branch of a mango tree at a height of about 20 feet from the ground. It was attached to the two branches with fine scalings of barks, cotton and fibres. Grass stems, very thin flexible tendrils of creepers and fibres formed the inner lining with one or two small pieces of (mango) bark. Fine strips of bark, cotton and fibres woven together formed the exterior walls. There was no cobweb anywhere.

The second nest, from Natagore, was also placed in a mango tree, but was at a height of about eight feet only from the ground. This nest was more solidly built than the last, cotton having been freely used to fix the nest firmly to the branches. In addition to the materials of the last nest, it contained scalings from bamboo and one or two spider's egg-bags but there was no cobweb.

The following are the measurements of the two nests:—

	1st nest.	2nd nest.
Greatest diameter including the walls .. ..	4 $\frac{1}{2}$ inches	4 $\frac{1}{2}$ inches
Diameter of the nest cavity .. ..	3 $\frac{1}{2}$ "	3 $\frac{1}{4}$ "
Height, top to bottom .. ..	3 $\frac{1}{2}$ "	4 "
Depth of the nest cup .. ..	2 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "
Thickness of the surrounding walls .. ..	$\frac{3}{8}$ inch	1 inch.

**Dicrurus macrocercus macrocercus** (Viell.).

On the 16th of March, while photographing the nest of the Oriole above referred to, squeakings from a neighbouring mango tree attracted my attention and, to my surprise, I found that the noise came from the nest of a Black Drongo or the common King-Crow with four perfectly hale and hearty chicks clamouring for rations. This also was another surprise for me because I—and I do not think any other Ornithologist—could have dreamt of finding a nest of this bird at so early a date. This is what Hume says about the breeding season of this bird:—

“A few eggs may be found towards the close of April, and again during the first week of August, but May, June and July are *the* months.” (Oates in Hume’s *Nests and Eggs*, 2nd Edition. Vol. I. p. 198.) Munn, in the article above referred to writes, “It breeds during the end of April and in May.”

Considering that on the 16th March there were four young, the nest was very probably built at the end of February, and the preliminaries to nesting, e.g. courtship, etc. must have taken place earlier. This instance, therefore, is certainly unusually early.

On the 21st and 23rd March I went to the locality again to photograph the birds. By this time the youngsters were quite grown up and had come out of the nest. I took their photographs. In the evening when I was preparing to return I noticed the mother bird feeding the young. They allowed me to approach within a few feet of them. As my film-supply was exhausted I was unfortunately unable to photograph this interesting and hitherto unphotographed scene. I brought away the deserted nest.

The nest was placed in the angle of the fork of an outer branch, strongly attached to the branches on three sides with thin pieces of bark, fibres and cobwebs which composed also the exterior of the nest. The interior had a few pieces of very thin scalings from plantain trees and fine fibres of palm or cocoanut leaves. It is a very neat, well-made and compact nest. The egg-cup is smaller and shallower than that of the above described nest, viz. of *O. l. luteolus*. But peculiarly enough though the Oriole is noted for its architectural perfection, it was found that the King-crow’s nest was neater and cleaner than that of the Oriole.

The following are the measurements of the nest:—

Greatest diameter, from one branch of the		
fork to which it was attached, to another		3½ inches.
Diameter of the egg-cavity	..	2½ ”
Depth	..	1½ ”
Height, top to bottom	..	2¼ ”
Thickness of the walls		1 inch

On 30th March I discovered another nest of this bird in the vicinity of Sodepur. The nest seemed to have been recently completed. It would appear therefore, that this bird is an early breeder in our district.

The heat this year (1924) has been excessive in March, in which month the average departure of temperature from the normal was  $+6^{\circ}$  F. It may be argued that this abnormal heat is responsible for the early breeding, of both the King-crow and the Oriole. But, really speaking, the birds in question began their breeding activities in February in which month the average temperature was not more than  $2^{\circ}$  F. in excess of normal. This slight excess could not have influenced the birds to breed so much earlier than their normal breeding season. The maximum day temperature of the atmosphere in Bengal when the Orioles and King-crows are usually known to breed (i.e. between the end of April and June), is always above  $100^{\circ}$  F. In Northern India and Rajputana the King-crow generally lays from May. In the former region the temperature in that month is nowhere less than  $110^{\circ}$  F. and in Rajputana never less than  $118^{\circ}$  F. The Oriole lays from April, when the temperature in Northern India exceeds  $105^{\circ}$  F. Now, the highest temperature recorded at Alipore this year in February was  $90.6^{\circ}$  F. This is less than the temperature in which these birds are usually known to breed.

#### *Aegithina tiphia tiphia* (Linn.).

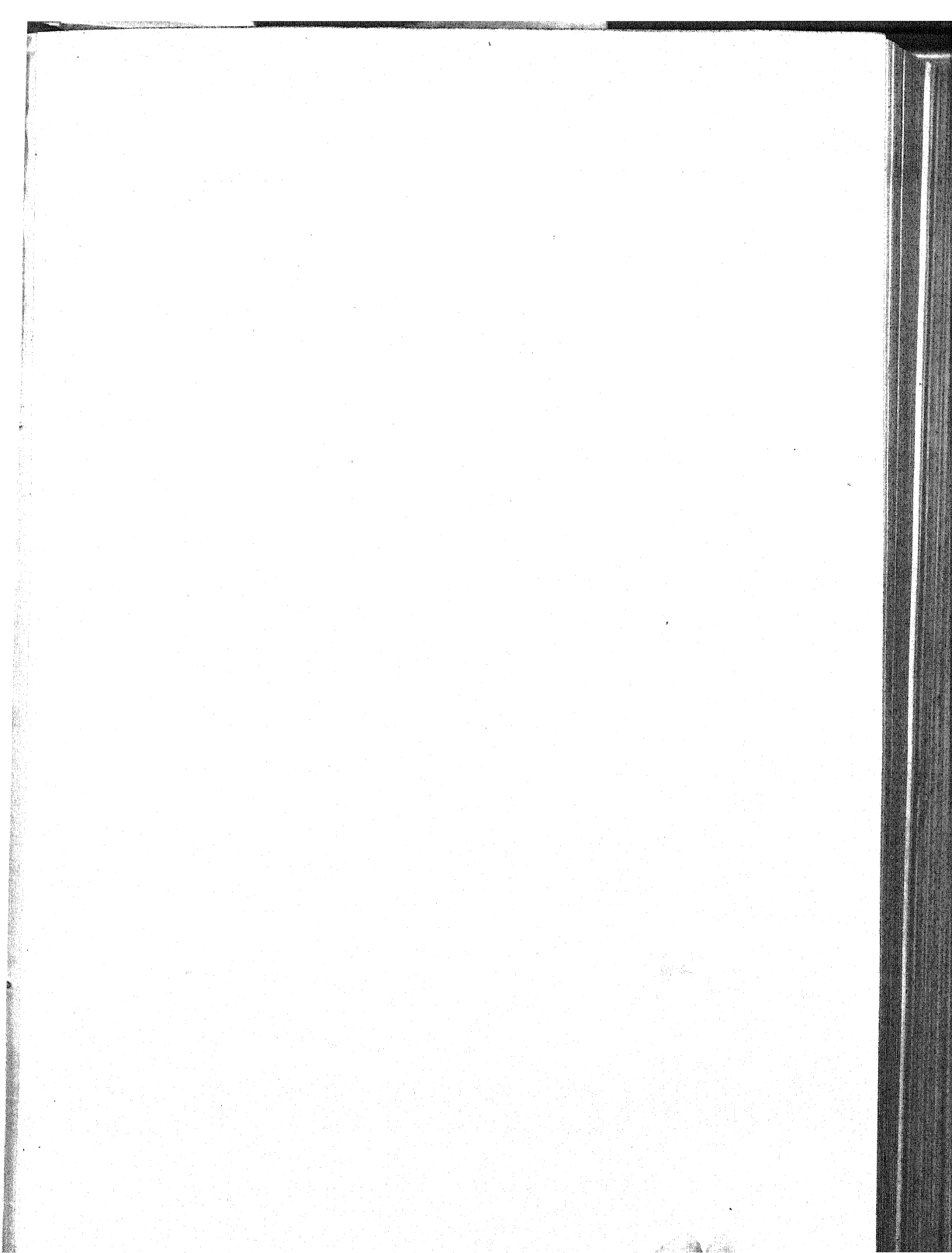
On the very same day i.e., the 16th March, when I discovered the nest of the King-crow, I was fortunate in catching sight of the nest of the common Iora in another mango tree close by. This finding also was no less a surprise to me. In Hume's "Nests and Eggs" we read, "The Common Iora breeds in different localities from May to September." In the recently published second edition of the Fauna of British India (Birds), Mr. Stuart Baker, however, puts the period a little earlier, "from April to July."

The nest of the Iora, I discovered, was a tiny thin-walled cup placed in the fork formed by a few vertical twigs of a mango tree at a height of about twenty-five feet from the ground. There were three eggs in the nest. This nest must have been built early in March considering that on the 16th there were three eggs.

This also is therefore an unusually early record.

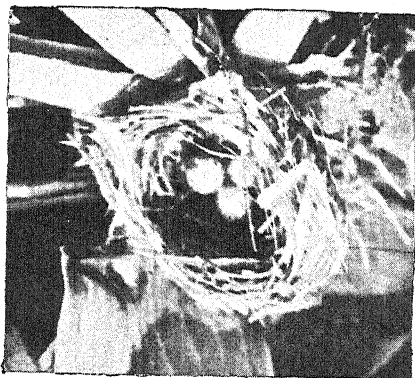
#### *Otocompsa emeria emeria* (Linn.).

The red-whiskered Bulbul (*O. emeria*) is one of the two common species of the Bulbuls of the plains of Bengal. The other is the Bengal Red-vented Bulbul—*Molpastes haemorrhous bengalensis*. The latter bird is not only commonly met with





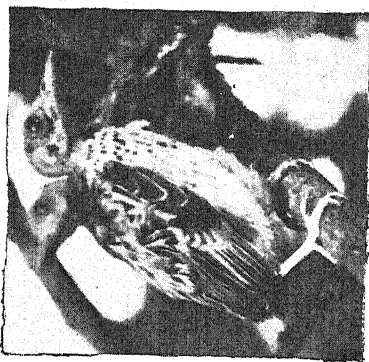
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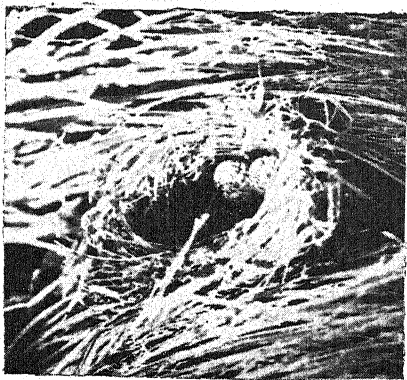
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amidst the hum and roar of this city but it also breeds here. But I have never seen *Otocompsa e. emeria* in the city proper. It prefers wood-lands and places with plenty of foliage. For this reason it is quite common at Alipore which savours more of the country than of the town.

But *O. e. emeria* appears to be more plentiful in our district than *Molpastes h. bengalensis*. The reason probably is that there being a great demand for the latter in Calcutta as fighting bird; large numbers being annually caught by bird-catchers. *Otocompsa e. emeria*, not being in such demand, is less molested.

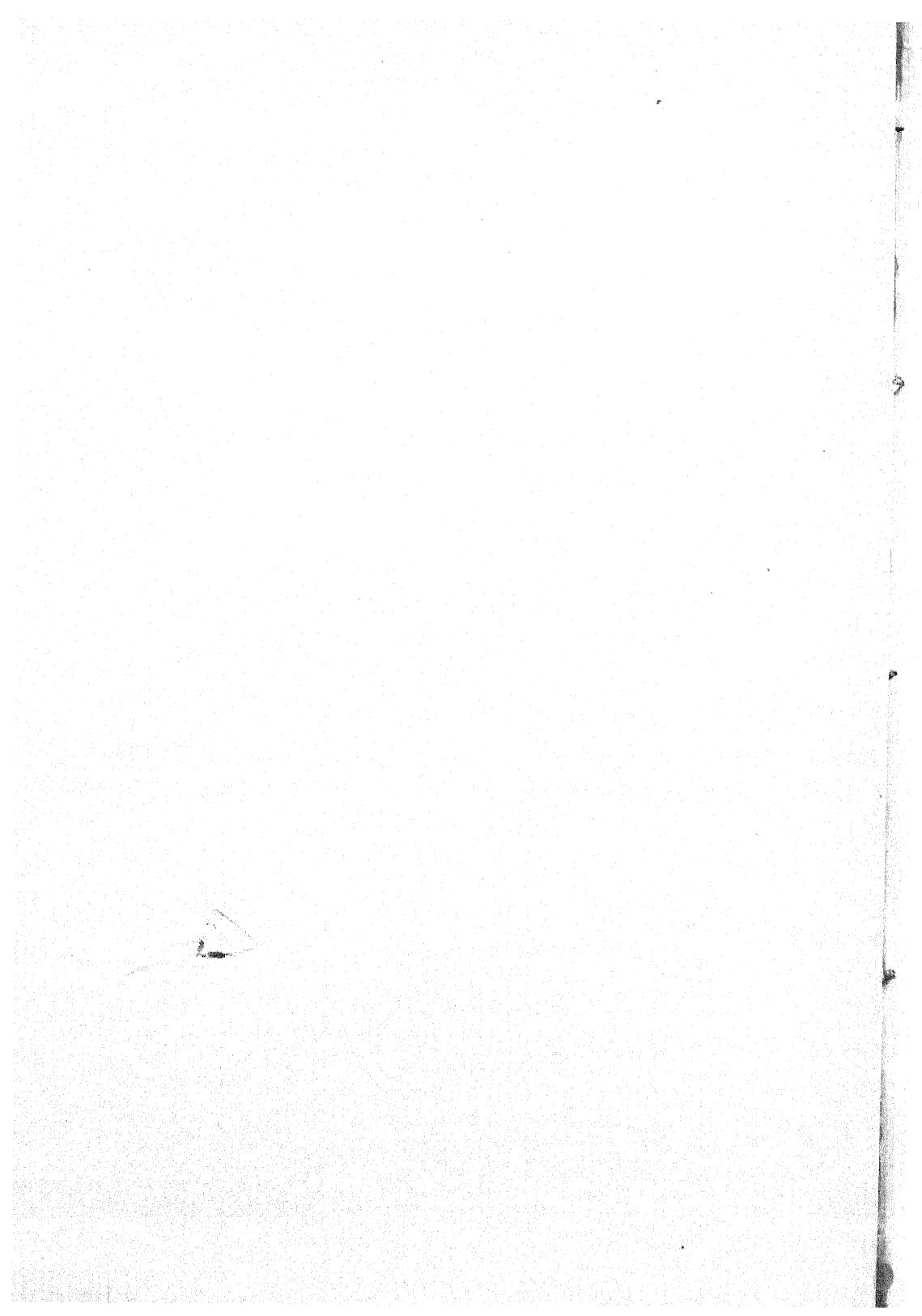
Of the three nests I have found during February and March, two were placed in rather uncommon situations. One was in a haystack and the other was placed in a banana tree in my garden house at Agarpara. This tree is not generally known to be selected for nest-building by this or any other bird. The latter contained three eggs on the 24th February and was my first Bulbul's nest of the season. I observed the building of the nest and the breeding preliminaries taking place about the middle of February. Of recorded instances this would probably be the earliest, for in all ornithological works, its breeding season has been stated to commence in March.

This nest was placed just where the trunk of the banana tree ends and the leaves begin. Here the nest was firmly fixed in position by being bound to the stems of two leaves by means of fine tissues extracted from the tree's bark on a foundation of one or two very dry leaves, a few thin twigs and a bit of down. The outer wall was made of fibres of the banana bark, dry leaves and cobwebs. The inner lining consisted of palm-leaf fibres. It was a small, round and compact cup. The measurements were :—

Height top to bottom	..	..	3 $\frac{1}{2}$ inches
Diameter including walls	..	..	3 $\frac{1}{2}$ inches
Diameter of the egg-cup	..	..	1 $\frac{1}{2}$ inches
Depth of the egg-cup	..	..	2 inches

#### DESCRIPTION OF PLATE XII.

- FIG. 1.—Nest with Nestlings of *Dicrurus m. macrocerus* found on the 16th March 1924; locality, Debandipur, 24 Parganas.
- FIG. 2.—The nestlings in No. 1 photographed out of the nest on the 23rd March, 1924.
- FIG. 3.—Nest with Nestlings of *Oriolus l. luteolus* found on the 9th March 1924; locality, Debandipur, 24 Parganas.
- FIG. 4.—Young *Oriolus l. luteolus* out of the nest (No. 3) age 2  $\frac{1}{2}$  weeks on the 23rd March 1924.
- FIG. 5.—Nest and Eggs of *Otocompsa e. emeria* in a hay-stack found on the 9th March 1924; locality, Agarpara, 24 Parganas.
- FIG. 6.—Nest and Eggs of *Otocompsa e. emeria* on a banana tree, photographed on the 24th February 1924; locality, Agarpara, 24 Parganas.



## 18. St. Thomas and San Thomé, Mylapore.

By THE REV. H. HOSTEN, S.J.

*Apparitions of St. Thomas and other legends.*<sup>1</sup>

Among the many surprises which the study of the legends about St. Thomas had in store not the least surprising was the allusion to St. Thomas' apparitions on the day of his feast. I had not found at first any mention of this except in Father Guy Tachard's letter of 1711,<sup>2</sup> and had shoved it aside as meaningless. However, I gave way to wonderment when I discovered that I could read the same thing in an ancient Latin hymn republished by Mgr. Zaleski<sup>3</sup> from the *Analecta Bollandiana*, Vol. 6, pp. 403-404

Like some of the Malabar songs<sup>4</sup> (should we not say like the Malabar songs?), this Latin hymn said nothing of King Mazdai, but appeared to place King Gondophares and his brother Gad, both of whom became converts, at the town where St. Thomas lay buried. There, we were told, a wonder occurs which no other Saint performs. On the day of his feast, with those fingers which touched Christ's sacred side, St. Thomas gives to the worthy the Sacrament (of the Holy Eucharist) and refuses it to the unworthy. Moreover, he is so averse to unbelievers that, in the town where his body truly lies, there lives neither heretic, nor Jew, nor pagan. What was this? Had we not here the wonder alluded to by Father Tachard: "No one is found nowadays who speaks of the apparitions of St. Thomas on the day of his feast"?

To let the reader judge of the hymn for himself, we give of it here a literal rendering.

1. Holy Thomas, prince of the world, grant, I beseech thee, that I may not be confounded because of the weight of my offences; grant that I may ever extol worthily thy dignity and piously invoke thy name.

2. Thou lovedst Christ so dearly that thou longedst to

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<sup>1</sup> This paper constitutes the first of a new series. The first series, published in *The Catholic Herald of India, Calcutta*, 1921-22, discussed tentatively a number of lithic relics discovered at Mylapore during my stay there in January-February 1921. Those articles have to be recast, and published with photographs.

<sup>2</sup> *Lettres édifiantes et curieuses*, Paris, 1781, vol. 12, p. 22.

<sup>3</sup> Mgr. Zaleski, *The Apostle St. Thomas*, pp. 196-199.

<sup>4</sup> Mgr. Zaleski, *The Saints of India*, pp. 129-137.

die with Him, saying: Let us too go forth and die with Him. Thou seekest what thou knewest not before: the way, the truth, the life.

3. Disbelieving in Christ's wonders, thou findest true life: touching His Humanity, thou confessedst His Deity, whence our strength grows stronger and our happiness.

4. Having thus discovered truth, thou becomest Christ's staunch witness, a great preacher to the world, the baptiser of three kings.<sup>1</sup>

5. With His own lips Christ speaks thy praise, saying thou wilt be His servant true: for, whatever thou gainedst, thou broughtest to Christ without reserve.

6. At the nuptial feast, O heavenly muser, thou eatest and drinkest naught; but, looking always up to heaven,

7. Thou afflictest thy flesh and bledest chastity.<sup>2</sup> With the treasures given thee, kind father of the poor,

8. Thou buildest a palace and raisest to life the King's own brother, and thus presently thou winnest over the King himself and his people.<sup>3</sup>

9. Thus, curing all the sick, thou passest preaching everywhere. Next, thou art pierced with lances and art crowned a martyr.

10. Thou despisest error; thou destroyest unbelievers: for, in the city where thou truly liest, there never lives any of the heretics, Jews, or pagans.<sup>4</sup>

<sup>1</sup> The kings referred to may be: the King of Sandaruk (Cranganore?) and king Gondophares and his brother Gad. King Mazdai seems to be out of the question. The very early texts place his conversion after the Saint's death.—Or, according to the Malabar legends: the king of the Coromandel Coast, the king of Malabar, and the king of 'Pandi,' or of the Pandians. This would leave out king Gaspar, or the Perumal of Jaffna, one of the three Magi.

<sup>2</sup> The Bollandist text places a comma after *benedictor* and a full stop after *egenorum*. It should be the reverse.

For the allusions see Mgr. Medlycott, *India and the Apostle Thomas*, pp. 255-256; Mgr. Zaleski, *The Apostle St. Thomas*, pp. 118-109. The king of Sandaruk (Andropolis) was celebrating the marriage of his daughter (Pelagia with Denis?): St. Thomas, invited to the feast, "did not eat of the dishes that were set before him, nor drink of the wine which had been brought from Syria, but from the bottom of his heart he invoked upon the guests the blessing of the Lord" (Zaleski, *op. cit.*, p. 108.) After the repast, the Saint blesses the married couple; and, according to the texts which have been spoiled by the Gnostics in favour of their tenets against marriage, he makes them vow chastity.

<sup>3</sup> Cf. Mgr. Medlycott, *op. cit.*, pp. 257-258; Mgr. Zaleski, *op. cit.*, pp. 109-123. Gondophares gives order to St. Thomas to build him a palace. During the king's absence, St. Thomas spends the money on the poor. The king returns and is angry. His brother Gad dies and finds that the Saint has built a palace in heaven. Gad returns to life and asks of his brother to sell him the palace which St. Thomas has built in heaven. Both are converted, and, on one occasion, after preaching from Mt. Gazi, St. Thomas baptises 9,000 of their subjects.

<sup>4</sup> If the reference is to Mylapore, the St. Thomas Christians, consider-

11. With those same fingers with which thou didst touch Christ's sacred side thou givest to the worthy the Sacrament and refusest it to the unworthy.

12. And this happens openly every year at thy feast.<sup>1</sup> Truly, such wonder as thine chances from no other saint.

13. O prince so glorious, O thou pre-elected, and dear to me,<sup>2</sup> grant that, though steeped in sin, I yet may be devout to thee. I honour thee and love thee; I seek thee and call on thee.

14. Strengthen me in chastity, in faith, in hope, and charity. Obtain that I may so serve God that from perdition I be saved.

15. By the way of truth lead me to the life of light. As soon as my last breath I yield, may God, sole true, grant me this boon. Amen.

Mgr. Zaleski states that the Bollandists published this hymn without any indication as to its origin and date. This is not correct. They say that the hymn was found in a codex of the Bollandian Museum, the codex being an apograph or copy coming from the Monastery of St. Saviour's of the Cistercian Order. Written in the 17th century and collated with the original, it contains a *Kalendarium Sanctorum Ordinis S. Benedicti P. N.*, collected in the 15th century, and some hymns, one of which (*Salve, Abba monachorum*), appears to be ancient, while the others were written at the end of the 14th century, "as will be seen below from the names of the authors." No names of 'authors' are given, but only the names of the Saints forming the object of the hymns, so that the question of the antiquity of our hymn to St. Thomas is not, as far as I can see, touched.<sup>3</sup>

Mgr. Zaleski judged that our hymn is not older than the end of the 9th century,<sup>4</sup> and that the stanzas which we have

ing themselves orthodox, might have boasted that there were none but orthodox Christians at Mylapore, even Jews, of whom there were many in Malabar, not being admitted. Less natural would be the supposition that all who settled at Mylapore, heretics, Jews, and pagans, yielded to the belief of the once unbelieving Apostle.

<sup>1</sup> *Et (not ex) hoc fit in manifesto*, says the Bollandist text.

<sup>2</sup> Mgr. Zaleski misses the punctuation of the Bollandist text in stanzas 13 and 15.

<sup>3</sup> *Analecta Bollandiana*, Vol. 6 (1887), p. 354.

<sup>4</sup> Some people will blunder with their eyes open. In spite of Mgr. Zaleski's clear statement that the hymn is "not older than the 9th century," the Rev. Francis A. Judd, Chaplain, Dehra Dun, publishing in the *Calcutta Review* (Febr. 1922, pp. 222-232) a dramatic composition of his own on St. Thomas, and reproducing part of the Latin hymn translated above, says *it is of the 9th century*. It is not his only fault. In a prologue he compiles all the legends, old and new, which he finds in Mgr. Zaleski's *The Apostle of India*, adopts all Mgr. Zaleski's fanciful derivations and renovated spellings of the proper names in the *Acta*, misprints some, and

numbered 10, 11, 12, were interpolated, probably in the last decades of the 13th century, or later. He states further that the hymn is a summary of the legend as made known in Europe by the Anglo-Saxon monk Ælfric. Ælfric translated the *Acta S. Thomae* from the Greek in A.D. 880, three years before Alfred the Great sent to India Sighelm, Bishop of Sherbourne, and Æthelstan.<sup>1</sup>

The reason then why Mgr. Zaleski assigned the hymn to a date not earlier than the end of the 9th century seems to be that he regarded it as posterior to Ælfric's translation. Why he considered stanzas 10, 11, 12 as interpolated, or why the interpolation should have taken place in the last decades of the 13th century or later, we are not told.

Mgr. Zaleski gives for the different translations of St. Thomas' body the following dates: from India to Edessa, A.D. 222-235; from Edessa to Chios, A.D. 1144; from Chios to Ortona in Italy, A.D. 1258.<sup>2</sup> All these dates fall before the last decades of the 13th century. Yet, the town where the body of St. Thomas is said to be truly resting must be one of four: Edessa, Chios, Ortona, or Mylapore. Did Mgr. Zaleski think that the town meant is Mylapore, and that the miracle, if it happened there, could have been alluded to in Europe only after the visit to Mylapore of Marco Polo (1293) and of John of Monte Corvino (1292-93)—their dates falling in the last decade of the 13th century—or after the visit of some later missionary like Bishop de' Marignolli and Friar Odoric? Perhaps.

We may suppose, indeed, that Ortona is not meant. The town must have been entirely Catholic, centuries before 1258. There could have been no pagans there in or after 1258. Chios must be in the same case as regards the date 1144. Edessa had been in the power of the Saracens long before the Crusades, and the boast ought to have been about the absence of Muhammadans.<sup>3</sup>

Could Mylapore have been meant? In India, in the early Portuguese period, the Christians lived generally close together

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declares that he takes some further liberties with this substratum of fact and fancy. And what we understand least of all, is that he does not even mention the Catholic Prelate whom he takes as his sole guide. The drama, entitled 'The Rose of India' is continued at pp. 458-465 (March 1922), and in the April number, where we have Act II, sc. I.

<sup>1</sup> Mgr. Zaleski, *The Apostle St. Thomas*, pp. 41, 45, 46, 196.

<sup>2</sup> Cf. *ibid.*, pp. 87-88; Mgr. Medlycott, *op. cit.*, pp. 112, 114, 297.

<sup>3</sup> Rebuilt by Emperor Justin; taken by the Persians (609), soon retaken by Heraclius; captured again by the Arabs (640); taken by the Greeks from the Arabs (1031); retaken by the Arabs, and successively held by the Greeks, the Seljuk Turks (1087), and the Crusaders (1099), who established there the 'county' of Edessa and kept the city till 1144, when it was again taken by the Turks.—Cf. *Cath. Encycl.*, New York, s.v. Edessa.

for mutual protection near their churches, and the Portuguese did boast at times that, as in Portugal, only Catholics lived in their fortresses. Mylapore had a Portuguese fortress only from 1611 or 1624; but, even before that date, from after 1523, when they settled at Mylapore, the Portuguese lived close together and formed a European settlement, the natives living in a separate town further away. When St. Francis Xavier was at Mylapore in 1545, there were already about 100 families living there, and, as there was no other church yet than that of the tomb, and perhaps the Luz Church of the Franciscans,<sup>1</sup> they must have lived close to the tomb. Was the case similar for the Nestorian Christians in pre-Portuguese days? In Nicolò de' Conti's time (1425-30) there were there as many as a thousand 'Nestorians'. Did they too congregate round the tomb? Very likely; especially as we hear of no church at Little Mount or at St. Thomas' Mount in Nicolò de' Conti's time. In earlier times, when the church at St. Thomas' Mount still existed, there would have been probably a small Christian settlement in that direction too.

Before I saw in stanzas 11 and 12 of the hymn an allusion to apparitions of St. Thomas on the day of his feast, I thought stanza 10 applied to Mylapore in Portuguese times, that is before 1640, when the English settled at Madras, or before about 1610, when the Dutch tried to get Palacate.<sup>2</sup> On the other hand, since we never find allusions to such apparitions before 1650, and since Father Tachard said that none had taken place

<sup>1</sup> An inscription at the Luz Church, Mylapore, runs thus: *Fre Pedro da Atougia/Reli<sup>o</sup> Observ<sup>te</sup> de S. Franc<sup>o</sup>/Edificou esta Igreja/de Nossa Senhora da Luz em/1516.* This means "Friar Pedro da Atougia, an Observantine Religious of St. Francis, built this church of Our Lady of Light in 1516." From a photograph in *Report of the fourth Centenary Celebrations, The Luz Church, Mylapore, 6th August, 1916.* Madras, Good Pastor Press, Broadway.

A wonderful inscription, if correct. Its correctness is rejected by Col. Love in his *Vestiges of Old Madras*, I. 289-290, and I think rightly so. A Church at the Luz emplacement in 1516 would mean a Christian community there at that date or even earlier, with a Missionary in attendance. But why should the Christians not have turned into a Church the ruined Church near the tomb rather than build a new one? Why was the Church near the tomb left in ruins till 1522? Simply because there were no Christians yet. The first Portuguese visitors to Mylapore in 1514, 1517, 1519, 1522-23 are ominously silent about the Luz Church, and about Franciscans at Mylapore. So is St. Francis Xavier in 1545. The Franciscans do not appear to have settled at Mylapore before 1540. This is not the place to work this out more fully. Besides, *Nossa Senhora da Luz* is such a common title that the legend of the mariners attracted by a mysterious light must be taken as a popular explanation of the title invented *post factum*. Fr. Francisco de Souza, S.J., in his *Oriente Conquistado* gives somewhere a similar story for a Church of N.S. de Luz near Goa, and that story would seem to have been carried to Mylapore.

<sup>2</sup> A letter by Father Francisco (Ricci?), dated Cochin, 2 Nov. 1612, speaks of Pulicat (Palacate) taken from the Dutch by the Portuguese. (Collection of MSS. in St. Joseph's College, Trichinopoly.)

within people's memory before 1711, it was to be suspected that the application to Mylapore referred to the pre-Portuguese period. In the Portuguese period, after 1547, the great wonder at Mylapore was the sweating of the stone cross of St. Thomas' Mount, to which the hymn could not be understood to refer; besides, the sweating happened generally on the 18th of December, 3 days before the Saint's feast, and that with intervals of years.

If Mylapore was the place which the pilgrim Theodore visited before A.D. 590 (and we may think it was) equally wonderful notions were current about it then. Let us translate fully the account of Theodore as we have it in St. Gregory of Tours.

"The Apostle Thomas, according to the story of his passion, is said to have suffered in India. His blessed body after a long time was brought to the town which the Syrians call *Ædissa*, and was buried there. So then, at the place in the country of India where he first rested, there is, besides a monastery, a temple of wonderful size, and carefully adorned and arranged (*diligenterque exornatum atque compositum*). Now, by divine interposition, God shows in that temple a great miracle: for a lamp<sup>1</sup> placed there and lighted burns continually day and night before the place of sepulture, though it receives from no one either oil or wick:<sup>2</sup> neither is it extinguished by the wind, nor does it fall down accidentally, or diminish in spite of its burning. And, through the power of the Apostle it receives increase, which, though a mystery to man, is known to the power of God.<sup>3</sup> This, Theodore, who went to that very place, related to us. In the above-said town, where we said that the blessed bones had been buried,<sup>4</sup> there is, when the feast takes place, a great concourse of people, who come from divers countries for vows and trade, and during thirty

<sup>1</sup> *Lignus* in Mgr. Medlycott, *op. cit.*, p. 80 n., represents *lychnus*.

<sup>2</sup> *Scirpus*: rush, bulrush.

<sup>3</sup> In 1517, a Muhammadan took care of the lamp which was always kept burning before the tomb of Mylapore. We know how particular Christians of Eastern rites are about keeping lamps burning before icons or in holy places. We found in the Mylapore Diocesan Archives more than one Armenian bequest stipulating that lamps should be kept burning before the Saint's tomb. Even now, half a dozen lamps are always burning at the tomb in fulfilment, I believe, of such ancient charitable bequests.

<sup>4</sup> *Ubi beatos artus diximus tumulatos* would mean 'had been buried,' if the writer thought that at least the greater part of the body had been carried to Edessa; 'are buried,' if he thought that the greater part was still in the original tomb. We translate by 'had been buried,' since St. Gregory of Tours holds for the translation of the body to Edessa; yet, we understand, with many others, that the 'above said town' was, not Edessa, but in India, at Mylapore.

Theoderic Ruinart, in his notes on this chapter of St. Gregory of Tours, says: "Deest hoc caput in Colb. tut. et semel cum 2 seqq. in Clar. a. In aliis MSS. caput hoc in duo dividitur: alterius titulus est: De virtute

days they are free to sell and buy without paying any tax. On those days, which fall in the fifth month, great and unusual boons are granted to the people: no scandal (*scandalum*).<sup>1</sup> arises among them; no fly sits on putrefied meat, nor is water wanting to slake one's thirst. For, whereas on other days water is drawn from a depth of more than one hundred feet, now, if you dig a very little, you will find water welling up in plenty: which favours, there is no doubt, are granted by the power of the Holy Apostle. Now, when the days are over, taxes are again imposed on the public; the flies which had disappeared return, and the water, which had been quite near, recedes. After that, there is such a supernatural downpour of rain, that the entire court-yard of the temple is swept so clean of all dirt and divers kinds of defilement that you would think the place had not even been trodden."<sup>2</sup>

Mgr. Medlycott took much pains to show that the climatic conditions do not suit Edessa in July, the 5th month according to the ancient Roman reckoning, and that, whereas the depth of the wells is exaggerated for Mylapore,<sup>3</sup> toll-free fairs are yet common in India.<sup>4</sup> We might add that the tale of wonders sounds peculiarly Indian. It reads like the manifestos which the priests of Hindu temples or their recruiting-agents make when they want to bring the people to some famous shrine on a great pilgrimage. This would only show

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basilicæ in qua postea translatus est." Cf Migne, *P.L.*, Tom. 71, col. 733 (S. Gregorii Episcopi Turonensis Miraculorum, Lib. I, de Gloria Martyrum, Cap. XXXII). Some MSS. attribute therefore to Edessa the stories of the lamp and of the festival, but on the authority, may be, of those who devised the headings of the chapters. This only shows how guarded one must be in discussing such texts, and how Mgr. Medlycott would have done well to discuss more fully the different variants of the text, a piece of work which it is impossible to undertake here in India.

<sup>1</sup> The meaning seems to be 'no quarrel arises'; 'no one gets hurt.' Is there not a notion among the Hindus that at certain places of pilgrimage no one dies during the festivities?

<sup>2</sup> Mgr. Medlycott, *op. cit.*, p. 80 n.

<sup>3</sup> W. R. Philipps (*Ind. Antiq.*, vol. 32, 1903, p. 151): "His [Gregory's] description of the depth of the wells could hardly apply to Mylapore." I believe that the depth of wells at Mylapore is from 40 to 60 feet.

<sup>4</sup> Ruinart (in Migne, *P. L.*, tom. 71, col. 733 n. f) writes: "According to the reckoning of the Syrians, who began the year with November, this is the month of March, when the Syrians celebrated the feast of St. Thomas, as appears from their Calendar, which Genebrard published at Lyons in 1615 with his Commentary on the Psalms; the Latins, however, celebrate on the 3rd of July, or of the 5th month, the feast of St. Thomas, i.e. of his Translation." Mgr. Medlycott (*op. cit.*, p. 76) notes that the season of the rains at Urfa or Edessa is in the months of January to March inclusive, which, if Ruinart is right, would go against identifying with Mylapore the place where the scene is laid. But is Ruinart right? Certainly the Syrians in India celebrated St. Thomas' feast (they object now to its having commemorated his translation to Edessa) on July 3, and I suppose that was anciently, and perhaps still, in *their* Calendars, the 5th month.

that the Christians of Mylapore would have it that their shrine and fair was not inferior to the most famous in the land. Besides, it appears to us that the context obliges us to apply the description to Mylapore, and as we know that the Christians of Mylapore six centuries later were still masters of the harbour, we conclude that it was they who remitted the customs on the occasion of the feast.

But, where had Father Tachard heard or read about apparitions of St. Thomas on the day of his feast? No one in 1710-11 could remember at Mylapore that anything like it had occurred. Had Father Tachard been asked questions about these apparitions by someone in Europe? His letter was addressed to Father de Trevou, S.J., Confessor to His Royal Highness the Duke of Orleans.

I had come thus far with this discussion, when a visit to the Indian Library of St. Mary's College, Kurseong, put me in possession of a text whence Father Tachard might have had his information.

The Carmelite Friar, Father Vincenzo Maria de S. Catharina di Siena in his *Viaggio dell' Indie Orientali* (Roma, 1672), a work chiefly describing the author's labours for the reunion of the St. Thomas Christians in Malabar, consecrates a chapter to "the miracles with which God favours this Christianity [of Malabar], and some prodigious tokens of St. Thomas' protection." At the end of that chapter (p. 153), we read :—

"From these signs one can know how much God loves that Christianity, and how great is the protection which the Apostle extends to them : neither am I astonished, because, if what John Nauclerus and Stapleton write is true, in the year one thousand one hundred and twenty-six [1126], John, the Patriarch of the Indies related in public consistory to Pope Callistus and the Sacred College of Cardinals that St. Thomas appeared every year visibly in priestly vestments and with his own hands communicated those Christians, giving to the Faithful and well-disposed the Sacrament of the Altar, and denying it to those who were stained with some grievous fault. This suffices to show how they are privileged above every other nation, and how God and the Saint look down on them with special affection."<sup>1</sup>

Astonishing as was the information about St. Thomas' apparitions, which at best sounded like a pious legend, it was for the moment quite superseded in my mind by the marvellous fact that a Patriarch of the Indies should have been in Rome in 1126.<sup>2</sup>

Before long, I received from Malabar two small English

<sup>1</sup> We are not told here that it was on the Saint's feast.

<sup>2</sup> Pope Callistus II. reigned from Febr. 1st, 1119, to Dec. 13th, 1124.

studies on St. Thomas and the orthodoxy of the St. Thomas Christians, in which further references to the travels of John were contained.<sup>1</sup> His visit to Rome was there set down in the year 1122, which falls correctly in the reign of Callistus II. Our Uniate priests in Malabar had not been slow in availing themselves of the information to show that, if John went to Rome to receive the pallium, he could not have been a Nestorian, but was in communion with Rome.

The question of his orthodoxy ought to stand over till we have satisfied ourselves about his identity and veracity. Let us quote first some of the authorities which we have secured. To say the least they are extremely extravagant

The Rev. Horace K. Mann writes :—

“ A thirteenth century chronicle,<sup>2</sup> while giving an account more or less mythical of one ‘ John, patriarch of the Indies,’ furnishes a curious addition to our knowledge of this attempt at reunion.<sup>3</sup> Professing to quote from the ‘ records of Calixtus,’ its author relates that in the fourth year of that Pope there arrived at Constantinople, after a journey of a whole year, the patriarch of that part of India which forms the end of the world (1122). He had come, we are told, for the pallium,<sup>4</sup> and he found at the imperial city envoys whom ‘ Calixtus had sent to promote concord between the Romans and the Greek emperor.’ Learning from these envoys ‘ that Rome was the head of the whole world,’ he returned with them to Rome. There, in reply to questions put to him by the Pope and his cardinals, he said that the name of the city whence he had come was Ulna (or Ultima, according to another reading), ‘ the capital and ruling city of the whole

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Therefore, either the year 1126 or the name of the Pope given above is wrong. After Callistus II. reigned Honorius II. (Dec. 15th, 1124–Febr. 13th, 1130), and Innocent II. (Febr. 14th, 1130–Sept. 24th, 1143).

<sup>1</sup> Father Samiel, *A conclusive proof of the St. Thomas Christians' adherence to the true faith*, revised and reprinted from the *Malabar Herald*, printed and published at the ‘ Union Press,’ Cochin, 1919. See p. 8, quoting Le Quien, II, 1275, and a long array of other names taken from Raulin. Father Samiel died since. His pamphlet was sent to me by an anonymous friend.

The Rev. Joseph C. Panjikaran, M.A., *The Syrian Church in Malabar : A historical dissertation submitted for the Master of Arts Degree of the University of Madras*. Reprinted with a few additions, Trichinopoly, printed by Rev. Bro. Joseph, S.J., Supt., St. Joseph's Industrial School Press, 1914, pp. 66. See p. 33, quoting Rev. Horace K. Mann, *The Lives of the Popes in the Middle Ages*, London, Vol. VIII (1910), pp. 219–220, and referring to Le Quien, II, 1276–1277.

<sup>2</sup> “ As we have it now, it is the work of Alberic, a monk of the Cistercian Abbey of Trois Fontaines, in the diocese of Châlons sur-Marne, as interpolated by the monk of Neu-Moustier (Huy). Alberic died after 1252.”—(H. K. Mann).

<sup>3</sup> At the Council of Lateran in 1123?

<sup>4</sup> From whom was he to receive the pallium, if his going to Rome was like an after-thought?

Kingdom of India.' It had a circumference of four days' journey, and two Roman chariots could run abreast along its walls, which were so high that even the towers of Rome looked small beside them. Phison, one of the rivers of Paradise, flowed through it, most limpid, and yielding gold and gems. Not far from the city, on a mountain surrounded by a deep lake, was the mother church of St. Thomas the Apostle. Round the lake were monasteries of the twelve Apostles. In the ciborium of the church, in a silver case (*concha*), suspended by silver chains, was the body of the Apostle, whole and entire, which, according to John, did the most marvellous things during Mass.<sup>1</sup>

"Though there is much in this narrative that is mythical and that foreshadows the wondrous stories of Prester John which were to excite the interest of Europe from this century to the close of the Middle Ages, it has incidentally preserved a grain of truth."<sup>2</sup>

A few pages earlier, the same writer shows under what circumstances Patriarch John may have met the Pope's envoys at Constantinople "Calixtus would not have been a true heir of the ideas of Gregory VII., if he had failed to make an effort to reunite the Greek and Latin Churches. In 1122, his envoys made their way to Constantinople with letters for the Greek Emperor, John II., Comnenus, on the subject of reunion. The Pope's letters are lost, but the Emperor's reply to them is extant. . . . Finally, after pleading his Eastern campaigns as the cause of his delay in replying to the Pope's overtures, he concluded with an enumeration of the presents, vestments, etc., which he had forwarded to him (June 1124)."<sup>3</sup> If John came to Rome with the Pope's envoys, it would seem from the above that he did not arrive except some time after June 1124. This date will have to be borne in mind to explain the discrepancies in chronology which the different accounts furnish.

Raulin in his book on the Synod of Diamper, Rome, 1745, writes concerning "John III., about 1129" :—

"Not without fear of error does Le Quien mention under the year 1122, among the Bishops of India, this John, about whom Assemani is silent.<sup>4</sup> He takes his information from what is called Alberic's Chronicle, where, under the year 1122, among the acts of Pope Callixtus II., who began to reign in the year 1119, it is related that a certain Patriarch of the

<sup>1</sup> "Chron. Alberici Trium Fontium a monacho Novi-Monasterii Holsensis interpolata, an. 1122, ap. M. G. SS., xxiii."—(H. K. Mann).

<sup>2</sup> Cf. H. K. Mann, *The Lives of the Popes in the Middle Ages*, London. Vol. VIII (1910), pp. 219-220.

<sup>3</sup> Cf. H. K. Mann, *ibid.*, Vol. VIII., 216-217.

<sup>4</sup> Indeed, I have found no reference to him in Assemani's *Bibliotheca Orientalis*, 4 folio volumes.—H.H.

Indies, called John, came to Constantinople in the 4th year of Callixtus' Pontificate, to receive the pallium, and that he came thence to Rome with the Pope's legates. There, before the Pope and the Cardinals, he narrated among other things that he resided in the Church of India where the body of St. Thomas was kept entire (*illaesum*) and standing, his clothes also being intact (*vestibus etiam illaesis*); and that every year, on his feast, the Patriarch, kneeling before him with the Bishops, offers the consecrated hosts, with which St. Thomas himself communicates with his own hand one by one those of the people who approach; but, if an unbeliever or one guilty of sin approaches, he withdraws and closes his hand. Such is the story of that Bishop.

"And, though we look upon stories (*narratiunculas*) of the kind with no less caution and scruple than Le Quien, yet we have read this very thing, with a few changes, quoted with approval, not only by Monk Helinand, St. Antoninus, Bellovacensis, Gesner and Nauclerus, whom Stapleton (writing about St. Thomas at p. 942 of his volume 4) agrees with, but also by the Author of the *Synchronon*, i.e. Odo, Abbot of St. Remy's, in a letter to Count Thomas, among the *Vetera Analecta* of Mabillon (p. 464 of the Paris edition of Montalant, 1723). In this letter he writes to Thomas 'what I saw and heard (says he) at the Roman Court this present year (Mabillon thinks he wrote about 1135), to wit, on the Friday after the solemnity of Ascension Sunday.' Then he recounts that a certain Archbishop (which I think more correct than what is reported by Alberic, namely that he was Patriarch of the Indies) presented himself with the Legates before the Pope, and that, after exposing the reason of his arrival, he related almost the same things which we copied above, except what Alberic writes about Communion; however, he advanced at the Court something similar, asserting that every year, when the Archbishop with the companions of this Order (Bishops) approaches to make offerings to the Apostles, he opens his hand, and receives gratefully the offerings of the faithful, whereas he declines the presents of heretics, withdrawing and closing his hand. He adds that the Pope, on hearing of this from those of his household, summoned the Bishop to his presence and forbade him under anathema to continue spreading false rumours in the Palace; but the Bishop, with the Lord Pope's consent, proved that it was so by swearing on the Holy Gospel. Finally, the Lord Pope and all the Court believed him.' But, as we were not then at the Court, we gave our opinion on this matter above, where we related these things (at the end of Dissertation 2).<sup>1</sup>

<sup>1</sup> This last sentence must be Abbot Odo's. I do not find it at the end of Document 2 to be mentioned and translated presently.

"From all this it seems to be clearly proved, however, that, as we wanted to show, this John must be set down in the series of Bishops and Metropolitans of India. I leave to others the chronological difficulty of conciliating the 4th year of Callixtus II. with the year 1135, when Innocent II. sat in St. Peter's Chair after Honorius II."<sup>1</sup>

Having written to Europe for the texts of some of the authors mentioned by Raulin (Le Quien, Alberic, Helinand, St. Antoninus, Bellocensis, Gosner, Naclerus, Stapleton, and Abbot Odo) and expecting but little help, I considered myself particularly lucky when I discovered in the Bollandists two texts of considerable import. One is a shorter recension than Alberic's Chronicle quoted by the Rev. H. K. Mann; the other by Odilo, Abbot of Cluny, is the same as the account ascribed by Raulin to Odo, Abbot of St. Remy's. Both deserve a place here.

*Document I.*—Our first document is from *Catalogus Codicum Hagiographicorum Bibliothecae Regiae Bruxellensis, Pars I, Codices Latini Membranei, Tom I. Ediderunt Hagiographi Bollandiani (Analect. Boll., tom. II-V),* Bruxellis, 1886.

At p. 122 (*op. cit.*) is mentioned Bibl. Reg. Bruxellensis Cod. No. 206. This Codex resembles Codd. 98-100, which are attributed erroneously to the 12th, instead of to the 13th. century. See p. 108 (*Catal. Cod. Hag., op. cit.*): "On the verso of the last leaf is added the Miracle of St. Thomas, written by another hand of the 13th century."

At fol. 189v of Codex 206, there is a text entitled: "*Miraculum S. Thomae Apostoli.*" This the Bollandists reproduce

<sup>1</sup> This long reference was sent us by Father Brocard of St. Thomas, T.O.C.D., St. John's Monastery, Mutholy, Travancore. We have translated it from the Latin, and have since secured a copy of Raulin's *Historia Ecclesiae Malabaricae*, Romae, 1745, where see the original text at pp. 435-436.

Why should Raulin himself place Mar John III.'s visit to Rome 'about 1129' since Callixtus II., had died in 1124, and the authorities he quotes (Le Quien and Alberic's Chronicle) are said to give the year 1122? At p. 377 (*op. cit.*) he assigns Mar John's coming to Rome to the year 1120, quoting Stapleton's *De tribus Thomis*, Vol. IV, p. 942.

Raulin's list of Indian Bishops (*op. cit.*, pp. 432-486) mentions as John I, the Bishop who in A.D. 325 is commonly believed to have assisted at the Council of Nice; he has no particulars about John II, who ruled about A.D. 890; John III. is the Bishop mentioned in the above text; John IV. reigned in A.D. 1490.

Alberic's Chronicle was written about 1241; he died about 1252 (*Cath. Enycl.*, New York, I, 535b); Helinand died either in 1223, 1227, or 1237 (*ibid.*, VII, 206b); Bellocensis is Vincent of Beauvais, the author of *Speculum majus*, who died in 1264 (*ibid.*).

at pp. 132-134, in an Appendix which we translate below under Document I.

Two recensions of this text are indicated by the Bollandists in *Bibliotheca Hagiographica Latina antiquae et mediae aetatis ediderunt Socii Bollandiani* (K.-Z.), Bruxellis, 1900-1901, p. 1180, No. 7 (or Nos. 8145, 8146). The two recensions are entitled by the Bollandists: "Miracula facta in India. De adventu patriarchae Indorum ad urbem sub Callisto papa II."

In the longer recension the prologue begins thus: "Temporibus antiquis consuetudo fuisse legitur." The beginning proper is: "Temporibus itaque Calisti papae II." The end is: "Qui talia tantaque miracula per s. suum apostolum Thomam . . . . operari non desinit, cum Patre . . . . Amen."<sup>1</sup>

The shorter recension begins: "Patriarcha regionis Indorum orationis gratia unius anni in spatio Romam," and ends in the same way as the longer recension.<sup>2</sup> This is the shorter text which we translate below under Document I.

*Document II.*—Our second document is from the same *Catal. Codicum Hagiographicorum. Pars I, Tom. II (Analect. Boll., tom. V-VIII)*, Bruxellis, 1889.

At p. 18 (*op. cit.*) is mentioned Bibl. Reg. Bruxellensis Cod. No. 7461. This MS., like Codex 7460, belonged to 'monasterium Vallicellense,' in the diocese of Cambrai, as is shown by a note of the 13th or 14th century.

In Codex No. 7461 (pp. 290-300), No. 45 speaks of "Passio Sancti Thomae Apostoli, quae est XII<sup>o</sup> Kl. Januarii." This was published by Membritius, tom. II. No. 46 (p. 300) contains "Expositio officinarum aulae regiae." This too was published by Membritius, tom. I, pp. 252-253. The Bollandists notice some variants in the Brussels MS. No. 47 (pp. 300-301) is entitled: "Narratio domni Odilonis Cluniacensis Abbatis, de quodam miraculo Sancti Thomae Apostoli." And the Bollandists remark: "Since this letter relates a miracle which much resembles the one we published above (tom. I, pp. 132-134), we shall edit it in Appendix." It appears accordingly at pp. 29-31 as an Appendix. This is our Document II translated below. All the copies begin with: "Salutare est omnibus," and end with: "maiora impetrari posse acclamabant."

We must notice still that the Bollandists remark elsewhere (*Biblioth. Hagiographica Latina* . . . (K.-Z.), Bruxellis, 1900-1901, p. 1181, No. 7. II, or No. 8147) that in other copies the letter is attributed to Odo, Abbot of St. Remy's at Rheims. In still other copies (cf. *ibid.*, p. 1383, No. 8148a) the letter be-

<sup>1</sup> It is a great pity that I do not possess a copy of this longer recension.

<sup>2</sup> I omit the numerous bibliographical references given by the Bollandists for both the longer and the shorter recension.

gins: "Dilecto suo frater O. salutem in Domino. Salutare est," where Brother O. appears without any qualifications.

### Document I.

[P. 132.] *The Miracles of St. Thomas the Apostle.*

The Patriarch<sup>1</sup> of the country of the Indians, travelling for a year with oars and sails, came to Rome to pray.<sup>2</sup> Questioned by the Sovereign Pontiff about St. Thomas and his miracles, he related before the whole clergy and senate the following, according as he knew it to be true.

<sup>1</sup> The reader will remark that the Bishop's name, John III., does not occur in the two texts we translate from the Bollandists. The term 'patriarch' may have become extensively used by the Nestorians at this time, as among the Armenians. (A. Fortescue, *The lesser Eastern Churches*, pp. 405, 430).

Bishop John de' Marignolli mentions a 'Patriarch of St. Thomas' in the account of his travels in the East (1339-53), which is found in his History of Bohemia (Dobner, *Monumenta historica Bohemica*, Prag, 1768, Pt. II, pp. 68-282). "In the chapter on the sending of the Holy Ghost, when at p. 259 he asks the question whether the supper is to be eaten with leavened or unleavened bread, he was told by the Patriarch of St. Thomas (*a Patriarcha S. Thomae*), according to their clear and beautiful tradition, that the Lord celebrated the Supper with unleavened bread, since at Easter tide Christ would not have found leavened dough in the house of any pious Jew, but that the Apostle [Thomas?] used common leavened bread, as at Pentecost the Jews would eat only common bread. The question arises here who this Patriarch of St. Thomas was. He may have been the chief Bishop of the Thomas Christians in Malabar, or also their Patriarch in the country of the Euphrates, which Marignola also visited. Even in this latter case, the question whether the Thomas Christians of India had Bishops in Marignola's time must be answered decidedly in the affirmative: for surely, if Marignola could meet the Patriarch of the Thomas Christians, the latter would also have maintained relations with his Christian communities, if he did not actually reside himself among them; indeed, John of Monte Corvino found also Nestorian Prelates in China." Cf. W. Germann, *Die Kirche der Thomaschristen*, p. 218, from whom we take the above without knowing how much of the text is in de' Marignolli's wording.

The passage quoted is not in Yule's extracts (Cf. *Cathay*) from de' Marignolli's account of the East. He must have overlooked it.

de' Marignolli might have met the Patriarch of St. Thomas at Mylapore, where he was four days (1349?). He describes the Mylapore shrine "of which St. Thomas had been Bishop" and the viney planted by St. Thomas, from which the priests obtained their wine (cf. *infra*).

<sup>2</sup> "Patriarcha regionis Indorum orationis gratia unius anni in spatio Roman remis et velo provectus advenit." A confusing sentence. The expression *remis velisque* would mean that, though he travelled with all speed, without implying that he came by sea, yet his journey had lasted a whole year. But we have *remis et velo*, which does not lend itself so easily to a figurative meaning.

Alberic's Chronicle, if we may trust H. K. Mann and W. Germann, says that the journey to Constantinople had taken a whole year.

*Orationis causa* might mean that he came to pray at the Apostles' tomb; but our second document says he came for advice, and under strange circumstances too.

"The town itself," [P. 133] he said, "where the body of the venerable Apostle Thomas rests in the Lord, is called Ulna.<sup>1</sup> It is the capital and ruling city of the whole of our kingdom.<sup>2</sup> Indeed, the size of that city is so great that it takes a four days' journey to go round. Such is the thickness of the walls encompassing it that at least two chariots can go abreast on its summit; but its height surpasses that of a high tower.<sup>3</sup> The Phison, one of the rivers of Paradise, flows through it.<sup>4</sup> Its waters, which are most limpid, throw up

<sup>1</sup> *Ulna* might be a copyist's mistake for *Melia* (Meliapur). One of the variants, as remarked by the Rev. H. K. Mann and W. Germann, has *Ultima*. Some medieval writers do indeed speak of Mylapore as a sort of *Ultima Thule* for India; but it is not likely that that fact produced *Ultima*.—In case Mar John III. referred to Mesopotamia, sometimes included in India by Syrian writers, *Ulna* might be a mistake for *Urfa* (Edessa).

<sup>2</sup> In 1122 Mylapore might indeed have been still one of the most important towns of the Coromandel Coast. However, Marco Polo (A.D. 1293) says that it was not much frequented by traders.

<sup>3</sup> Some of our ancient Indian towns were enormous. Think of Mandhu and Delhi. Think of our modern Calcutta with its suburbs. It is not said that the whole area of the town was walled in. As for the thickness and height of the walls, we might condone the exaggeration, if any there was, in view of the fact that our Easterner was perhaps bent on making himself interesting, as much as on humbling the Romans. But, after putting the mildest construction on the text, we do not see how the passage was ever applicable to Mylapore. The Mylapore of our medieval travellers, less than 200 years after Mar John III., does not appear to have been walled.

The Portuguese never allude to walls anterior to their arrival (1517 or 1522). S. Thomé was walled at least twice, in 1611 or 1624, and about 1690. The walls were dismantled the second time about 1697. Cf. Love, *Vestiges of Old Madras*, I, 576. Now no traces of walls are visible, except near the shore, close to the flagstaff.

It would require much good will to see in the four days' circumference of the town an allusion to the four leagues of land donated by Bukka Raja to the Mylapore shrine.

<sup>4</sup> We find the name Phison applied by the Syrians to the Indus; perhaps also to the Ganges. A geographical fragment in the *Liber Calipharum* published by Land in his *Anecdota Syriaca* (Lugduni-Batavorum, Vol. I, 1862, p. 122) has: "And these are the biggest rivers: the Indus or Phison, the Nile or Genon, the Tigris or Phrat, the Jordan, the Cephisus, the Tanais(?) . . . ." Cosmas Indicopleustes (A.D. 535) says: "The river Phison [Indus] divides India from the Huns. . . . Of these (rivers of Paradise), the Phisón is the river of India which some call Indus or Ganges. It flows down from regions in the interior and falls by many mouths into the Indian sea." Cf. J. W. McCrindle, *Ancient India*, A. Constable, Westminster, 1901, p. 165. Pseudo-Kallisthenes, who wrote about A.D. 420, and whose treatise belongs to the Lausiack Histories of Palladius, writes: "This river Ganges is in our opinion that which is called in Scripture the Phisón, one of the rivers which are said to go out from Paradise." (*Ibid.*, p. 178).

See also on many other identifications W. S. Smith, *Dict. of the Bible* 2nd ed., Vol. I, Pt. I, pp. 847-8, s. v. Eden. See also Marignolli's strange account of the Phison in Yule's *Cathay*, II (1866), pp. 349-350.

What of the Adyar of Mylapore? Would the Phison fit Edessa near the Euphrates? The rest of the story does not apply to Edessa more

the richest gold and the most precious gems, whence our people become passing wealthy. The whole of this city, as behoves, is inhabited by faithful Christians. No heretic or infidel can live among them without either repenting at once or dropping dead suddenly.<sup>1</sup>

"At a small distance outside the ramparts of the town there is a lonely mountain surrounded on all sides by a very deep lake.<sup>2</sup> On it rises a high tower, on the top of which stands the mother-church of the most blessed Apostle Thomas.<sup>3</sup> Around the said lake, on the outside, there are XII monasteries in honour of the XII Apostles.<sup>4</sup> The aforesaid mountain, on which the Church of the Apostle Thomas is situated, is not accessible to anyone during the year, nor does anyone rashly venture to go to it. Only once a year does the Patriarch, whoever he be, enter it, with those who come from all sides to celebrate the sacred mysteries: for, when the day of the Apostle's feast approaches, eight days before it and as many

than to Mylapore, and; as Edessa was so much nearer Rome, and in the hands of the Crusaders, and pilgrims from Mesopotamia might easily have refuted the story as applied to Edessa, we may suppose that the 'Indian Patriarch' would lay the story in real India. Who could verify it then? But the only place in India claiming the tomb of St. Thomas would have been Mylapore.

According to Indian or Syrian notions there would have been nothing extraordinary in making the Phison issue from Paradise (Ceylon), re-appear at Mylapore, and continue elsewhere as the Indus. See *infra* note (under Prester John's letter).

<sup>1</sup> The meaning of this sentence appears from the sequel. Neither document speaks of Jews, as does the Latin hymn translated at the beginning of this chapter.

<sup>2</sup> A deep lake around (Great) St. Thomas Mount, Mylapore, must sound incredible to anyone knowing present conditions. Only the shallow Adyar flows close to the foot of the Great Mount. In the middle of January, 1923, I noticed a large number of lakes in the neighbourhood of St. Thomas Mount, but no one would have thought, if he wished to be exact, of describing the Mount as surrounded on all sides by a very deep lake.

<sup>3</sup> There might have been on the Great Mount in pre-Portuguese times a sort of light-house. I have in my collections some texts to that effect. There had been on the Great Mount a Church going back to at least the 7th century and probably a monastery too. But who can understand a Church on top of a tower? And who will believe that that Church held the tomb of the Saint? What about the tomb at the Church nearer the sea? The confusion would be bad enough for an Indian Bishop who had not visited the place. How shall we qualify the statement, if it comes from an 'Indian Patriarch,' who we must suppose had presided at the yearly ceremonies?

<sup>4</sup> Less than 200 years later, there was no trace or souvenir of these twelve monasteries round the lake. None of the medieval travellers refers to them. There was not even a tradition about them or the lake in Portuguese times, and yet the Portuguese picked up at Mylapore so many old traditions. I could understand a Church at Mylapore with icons of the twelve Apostles, for even now both the Church of the Luz and the Church at the Great Mount have each a collection of such paintings, both the gift of Armenians.

after it, the abundant waters surrounding the said mountain decrease to such an extent that one hardly remarks there had been water there.<sup>1</sup> Hence, there flock thither, from all sides, Christians and infidels coming from afar, and sick people of all sorts, who, through the merits of the blessed Apostle Thomas, expect undoubtedly the remedy and cure of their illness.

“Within the holy of holies of the said Church, there is a magnificently wrought ciborium,<sup>2</sup> covered with silver, and adorned with the various precious stones produced by the river of Paradise called Phison. Within [the ciborium] there hangs, suspended by silver chains, a most precious silver concha,<sup>3</sup> and, however precious it be, as the story of the Apostle himself also<sup>4</sup> says, it is much more precious for the treasure within it. In truth, the most holy body of the Apostle is yet preserved in it, intact and entire, as on the day of his death, and he is seen standing in it erect, as if alive.<sup>5</sup> Before his presence hangs, from silver ropes, a golden lamp filled with balsam. Once it has been lit, the balsam does not decrease from year to year, nor does it get extinguished; but, God willing it so, and through the Apostle’s intercession, all things are found the next year just as they were, as is proved by the greater

<sup>1</sup> Is the Adyar dry on the 3rd of July, when the feast would have been celebrated at Mylapore? Father Tachard says in his letter of 1711 that the Adyar was formed by the bursting of the dyke of a distant tank. When he says that this had occurred at the beginning of the 17th century, owing to heavy rains, we have reason to suspect he is not accurate. I have not met any other allusion to such a bursting, and we should think that the Adyar is as old as Mylapore. The reminiscence may have been about a much older fact.

<sup>2</sup> The idea of a ciborium, or dais above the high altar, seems to be borrowed from the Greek and Roman Churches which John III. would have visited on his journey. Would Edessa still have had a ciborium in 1122? The old Malabar Churches do not appear ever to have had a ciborium. There are none now, as far as I know, in the non-Uniate Churches of Malabar.

<sup>3</sup> “In the year [A.D.] 442-443, Anatolius the General (in command of the troops) made an offering of a silver casket to hold the Bones of the Apostle St. Thomas.” (Medlycott, *op. cit.*, pp. 103-104.) It was suspended by a silver chain, says another text, *ibid.*, p. 102. Unfortunately for our case in favour of Mylapore, this was at Edessa.

<sup>4</sup> In what story of the Apostle does this occur?

<sup>5</sup> We should think that the greater part of the body was at Mylapore rather than at Edessa. It could not have been entire at either place, if some of the many relics of St. Thomas shown in different Churches of Europe are genuine. Be that as it may, for neither place are we prepared to believe that the body was preserved in a concha, or shell-like vessel, and was standing in it erect, as if alive. Did not the slab of chalcidony which covered the Apostle’s relics at Chios (from 1143 or 1144), and which has been at Ortona since 1258, come from Edessa? If Mar John III. speaks of relics of the Saint at Mylapore, we should think that the greater part was in the tomb: for, if what the Portuguese found at Mylapore in 1522 in a tomb at a depth of some 16 palms was not part of St. Thomas’ body, then the whole contention in favour of St. Thomas’ connection with Mylapore seems to be lost.

marvels to be derived next from anointing oneself with the liquid.<sup>1</sup> Indeed, when, according to the custom of the feast, the Patriarch, as has been said, returns each year to the afore-said Church, he is followed by a great concourse of people, men and women, all of them clamouring and demanding unceasingly even the smallest particle of the balsam burning before the Apostle's tribunal: for no one doubts that, God willing, the sick, whatever their illness, will recover at once when anointed with it.

"Next, as in the holy solemnities of Easter, the Patriarch, with his suffragan Bishops, prepares himself to lower(?) the said concha;<sup>2</sup> after which, amid hymns and spiritual praises, they lower(?) little by little the concha with the sacred body. Taking up the Apostle's sacred body with much trembling and great reverence, they place it on a golden seat near the altar. [P. 134] By the creator's will, he is yet so entire that he appears as when he walked the earth alive. His face shines like a star; his hair is red and falls almost on to his shoulders; his beard is red and crisp, but not long; his whole appearance, in fine, is most comely to see. His clothes too are still as strong and entire as when first put on.

<sup>1</sup> See above, in this chapter, how St. Gregory of Tours speaks in almost similar terms about the lamp mentioned by Theodore. But the Oriental Christians, would relate incredible stories about the lamps of their churches.

Johann Schiltberger was told of the Mountain of St. Catherine, at Mount Sinai, that "when a monk is about to die, his lamp becomes dim, and when it goes out, he dies. When the Abbot dies, he who sings the mass finds on the altar a letter, in which is written the name of the man who is to be the abbot, and his lamp relights of itself." Cf. *The Bondage and Travels of Johann Schiltberger, a native of Bararia, in Europe, Asia and Africa*, 1396-1427. By J. Buchan Telfer, London, Hakluyt Society, 1879, p. 55.

Johann was at the Church of the Holy Sepulchre, Jerusalem. "There is a lamp that burns all the year until Good Friday: then it goes out, and relights itself on Good Saturday (*ibid.*, p. 57).

Assemani (*Bibl. Orient.*, Vol. IV, pp. CCCLXII-CCCLXIX) says that this story is heard earlier than A.D. 1110, and that the non-Nestorians considered it a fraud, but that the Greeks, the Armenians, the Egyptians, and the Abyssinians believed in it.

In a Calicut temple, according to a Jewish Slavonian pilot brought back to Lisbon perforce, "on a certain day of the year, some lamps in this same temple [with diabolical apparitions] begin to burn spontaneously and cause many deformities of nature to appear." Cf. *A Journal of the first Voyage of Vasco da Gama, 1497-1499*. By E. G. Ravenstein. London, Hakluyt Society, 1898, p. 139.

<sup>2</sup> "Deinde ad praedictam concham expendendam cum suis suffraganeis episcopis patriarcha velut in sacris paschalibus solemnitatibus praeparat sese, et post haec cum hymnis et spiritualibus laudibus paulatim expendunt cum sacro corpore concham." The word *expendere* might mean 'to examine'; but the translation which we give seems to meet the case better. The word occurs once more lower in the same sense. Germann also understands it as meaning 'to lower.' (See *infra*).

"When the Apostle's body has been thus taken down<sup>1</sup> and placed in the chair, presently the sacred ministers perform the ceremonies proper to the feast. But, when the time of receiving the Eucharist has come, the Patriarch arranges with the paten on the altar the sanctified hosts, bears them with great reverence to the place where the Apostle is seated, and, kneeling, offers them to the Apostle, who, by the Creator's disposition, extends his right hand and receives them so carefully as to appear, not dead, but quite alive. Indeed, receiving them in his outstretched palm, he keeps them there to give one to each: for the whole assembly of the faithful, men and women, approach one after another, with much reverence and fear, and each receives in his mouth a host from the hand of the Apostle,<sup>2</sup> the Apostle giving it. But, if an infidel or a heretic or a person sullied by other stains of sin approaches him in order to receive Communion, the Apostle, while the sinner stands there and all look on, at once withdraws his hand with the hosts, and does not again open it as long as the man is there.<sup>3</sup> As for the sinful man, he will never get off unless he presently repent and, touched with sorrow, receive Communion from the Saint: else, he dies before he leaves the

<sup>1</sup> "Taliter igitur deposito atque in cathedra apostoli corpore collocato." The word *deposito* shows that the concha must have been lowered.

The idea of seating the Saint in a chair may have been suggested by the fact that every member of the Greek clergy is buried in complete ecclesiastical attire, and that the custom of interring in a sitting posture is still observed in the case of a Bishop.

"In a recent account of the obsequies at Constantinople of a Bishop of the Greek Church (*The Times*, August 29, 1878), the Correspondent writes: 'I was ushered into a small densely crowded church, and on walking forward a few steps, found myself confronted by an aged and venerable prelate seated on a throne in full canonicals, richly decorated with gold and jewels. He sat perfectly motionless, with his eyes closed, and holding in his right hand a jewelled rod resembling a sceptre. Two or three people advanced and devoutly kissed his hands, but he did not return the customary benediction and gave no signs of consciousness. 'Is he asleep?' I whispered inquiringly to my friend. 'No, he is dead: that is the late patriarch.'" Cf. *The Bondage and Travels of Johann Schillbeyer*, op. cit., p. 233.

<sup>2</sup> Did not the Indian Syrians receive the host or consecrated bread in their hands and communicate themselves?

In receiving Communion "a person will lay one hand in the other, forming a cross, and the priest will lay the bread in his hands and he takes it. In some places the priest puts it in his mouth, as with the children everywhere; then the communicant will go and drink the drink-offering." Cf. Surina d'Bait Mar Shimun, *Assyrian Church Customs and the Murder of Mar Shimun*, London, Faith Press, quoted through *The Tablet*, London, Febr. 25, 1922, p. 247.

<sup>3</sup> We may freely reject the miracle of the Apostle's opening and closing his hands, as long as it rests on such poor evidence as this. A natural explanation which one dares hardly devise is that of a statue, which would have been made to act automatically; but the device would have been childish and the interpretation blasphemous.

place. Many of the infidels, struck with fear at so great a miracle, abandon the errors of their paganism: converted to the faith of Christ, they ask unceasingly for the sanctifying waters and are baptized together in the name of the holy and undivided Trinity.

"These ceremonies over, and the sacred mysteries pertaining to the feast of the holy Apostle Thomas having been celebrated by the clergy and the people the whole of that week, the Patriarch and the aforesaid ministers of God, Archbishops and Bishops,<sup>1</sup> tremblingly replace the Apostle's sacred body in the same place, great fear and reverence reigning all around, as when they take it down (? *sicut quando illud expendant*).

"After that, each one returns home happy and rejoicing at having been privileged to see such great miracles. And, in the same way as the plain and place aforesaid entirely dries up about the feast of the Apostle, when the people crowd in, so now, when they go away, it returns quickly to its former condition, and is now at once flooded in deep water."

That is what the Patriarch of the Indians related at the Lateran Court, and Pope Callistus II., with the rest of the Roman Church present there, raised their hands to heaven and glorified with one accord Christ, who, not ceasing to work yearly such and so great miracles through His holy Apostle Thomas, liveth with the Father and the Holy Ghost, world without end. Amen.

We might perhaps suggest, for want of anything better, that by the body of St. Thomas may have been meant the low-relief statue of St. Thomas found underground in 1729 near the tomb of St. Thomas at Mylapore. The consecrated hosts might have been made to touch the statue, and St. Thomas himself would have been understood to administer Holy Communion. But, the withdrawing and closing of the hand remains as unintelligible in the case of a statue as in the case of a dead body.

The Rev. Adrian Fortescue refers to cases of ordination by a dead body in Armenia. The Katholikos of Etshmiadzin is ordained by a kind of supplementary imposition of hands, the imposition of a real or supposed relic of St. Gregory the Illuminator, his right arm, called the holy Atsch.<sup>2</sup> From Malabar we have the curious story that twelve Nestorian priests went through an alleged form of ordination by laying on the head of Archdeacon Palakomatta a letter from the im-

<sup>1</sup> It requires more authoritative texts than this to make us accept for Southern India a Patriarch with Archbishops and Bishops who would have met yearly at Mylapore for the Saint's feast. These numerous prelates might have been found near Edessa; not so in India, I think.

<sup>2</sup> A. Fortescue, *The lesser Eastern Churches*, p. 416.

prisoned Bishop Aithallâhâ (about 1653).<sup>1</sup> It is also stated that in 1810, when a non-Uniate Malabar Bishop died without ordaining a successor, the clergy took a priest, brought him to the dead body, said the prayers for ordaining a bishop, and laid the dead hand on his head.<sup>2</sup>

Our explanation about veneration shown to a statue of St. Thomas, instead of to the body of the Saint, was, we find, anticipated by Raulin. "Moreover," he says, "we might think that what is said about St. Thomas' body should be attributed to some statue of the Holy Apostle (for we consider that also possible) rather than say that, either at Edessa or elsewhere, a few bones and ashes of the Apostle wrought the above-said miracle."<sup>3</sup>

Why do we not without more ado dismiss the whole of this extraordinary story and brand it as a barefaced hoax? We still think that the story emanates from India. Extravagant as it is, it appears to establish with St. Thomas in India a link older by 170 years than Marco Polo, and as such it deserves to be treated with all considerateness.

Our first reason for thinking so is that Bishop John de' Marignolli picked up at Mylapore itself in A.D. 1349 a story which looms large in Mar John III.'s account. "Standing miracles," writes de' Marignolli, "are, however, to be seen there [at Mylapore] in respect both of the opening of the sea and of the peacocks (*tam de aperitione maris quam de pavonibus*)."<sup>4</sup>

"There is nothing before," says Yule, "about this opening of the sea, and the meaning is dark."<sup>5</sup> Neither does de' Marignolli tell us in what the miracle of the peacocks consisted.<sup>6</sup> Probably he referred to two facts widely known to medieval readers. Yule continues to say that John of Hese has a foolish story about St. Thomas' body being on an island in the sea, and that, every year, a path was laid dry for fifteen days for the pilgrims to pass through the sea. We know that story well enough by now. John of Hese had it from our Mar John III. For once, however, we disagree with Yule when he

<sup>1</sup> A. Fortescue, *The lesser Eastern Churches*, pp. 364-365.

<sup>2</sup> *Ibid.*, p. 365, n. 1, quoting Germann, *Die Kirche der Thomaschristen*, p. 621. Fortescue doubts, however, whether men so ordained were recognized as real bishops.

<sup>3</sup> Raulin, *Historia Eccl. Malabaricae*, p. 378.

<sup>4</sup> Sir H. Yule, *Cathay and the Way thither*, 1st ed., London, 1866, II. 367.

<sup>5</sup> *Ibid.*, I. 376, n. 1.

<sup>6</sup> I cannot guess what the standing miracle of the peacocks may have been like. Are there at Mylapore legends pointing to an explanation? Or have the Hindus near Mylapore, the 'town of peacocks,' any legends about a standing miracle of peacocks? In *The Catholic Herald of India*, Calcutta, we have dealt with ancient interchanges of legends between Christians and non-Christians at Mylapore. Cf. *ibid.*, January 31-March 28, 1923, pp. 79; 94; 110; 126; 142-143; 158-159; 174-175; 189-190.

says that Marginolli, who had been at the place, could not mean such stuff as this. According to Yule, de' Marignolli's standing miracle of the opening of the sea may have alluded to the tradition that St. Thomas, in erecting a cross at Mylapore, which was then ten leagues from the sea, prophesied that, when the sea would reach that vicinity, white men should come from the world's end and restore the law which he had taught.<sup>1</sup> We fail to see what standing miracle de' Marignolli might have seen in such a tradition, granting that he had heard it. He was at Mylapore only four days.<sup>2</sup> If he came at any time other than the Saint's feast, he may have heard the story of the opening of the sea, and would have recorded it for what it was worth and without pretending to have seen it. A standing miracle would be a phenomenon often repeated, and, immediately after the passage quoted, de' Marignolli gives us an instance of what he considered to be a standing miracle. "Moreover, whatever quantity of the earth be removed from the grave one day, just as much is replaced spontaneously against the next."<sup>3</sup> We may take it therefore that the story of the opening of the sea was a well-known one in Malabar and in the Coromandel country, and that, carefully investigated, Malabar traditions might yet be made to yield vestiges of it and of its meaning. Both the Christian and the Hindu traditions seem to have preserved the memory of some tidal wave that would have buried a broad strip of the foreshore. Was there for a time after that a yearly receding of the waters so that parts buried in the sea showed again?

Perhaps Yule is nearer to an explanation about the opening of the sea when he writes (*Cathay, op. cit.*, II. 376, n. 1): "There is another curious Tamul legend bearing upon this which is cited in Taylor's *Catalogue Raisonné of Or. MSS.* (Madras, Vol. III, p. 372). "Mailapur was anciently inhabited by the Jainas. One had a dream that in a few days the town would be overwhelmed by the sea. Their holy image was removed further inland, and three days later the old town was swallowed up. The temples were then reestablished in a town called Mailamanagara, where exactly the same thing happened again. It is added that tradition runs in reference to the

<sup>1</sup> Yule, *op. cit.*, *ibid.*

<sup>2</sup> *Ibid.*, I. 378.

<sup>3</sup> *Ibid.*, I. 376. Not more spontaneously than now, and therefore no miracle. To prevent the pilgrims from scooping out the earth or damaging the bricks of the tomb, fresh earth from outside is now continually thrown into the tomb. A glaring case of clerical imposition, someone will say. Why? Contact with the tomb suffices to consecrate the earth, the pilgrim would answer. But we cannot insist enough that pilgrims should not be allowed to penetrate into the tomb and damage the bricks. Too much damage has already been done in this way, and that within the last twenty years.

whole coast from San Thomé to the Seven Pagodas, that extensive ruins exist beneath the sea and are sometimes visible."

Another reason why we consider Mar John III.'s stories as having originated from India is that St. Thomas' right hand, the hand which touched Our Lord's sacred side, as the Latin hymn put it, seems to have exercised in India a special fascination, so much so that it has led to legends more or less similar to Mar John's, whose original home was doubtless India. We should expect that some versions of them survive still in Malabar.

What are we to think for instance of the story we read in John de Mandeville? Much of what the gallant knight writes about Maabar or the Coromandel Coast seems, indeed, to have been copied from the Franciscan Friar Odoric of Pordenone; yet, when he happens to speak of St. Thomas of Calamyne (*i.e.* Calamina), he stands suddenly alone and has apparently independent knowledge. It is one of those passages where, instead of calling him a liar, a plagiarist, we feel inclined to credit him with a journey of his own to India. And there are other passages which force on us the conclusion that too much has been made of his similarities with Marco Polo and Odoric, and too little of the dissimilarities.

de Mandeville's story about St. Thomas is remarkably similar to that version of Mar John's story in which St. Thomas' hand rejects the gifts of the unworthy.

"From that Country," writes Sir John,<sup>1</sup> "Men pass by many Borders toward a Country, a 10 Days' Journey thence, that is clept Mabaron; <sup>2</sup> and it is a great Kingdom, and it hath many fair Cities and Towns.

"In that Kingdom lieth the Body of Saint Thomas the Apostle in Flesh and Bone, in a fair Tomb in the City of Calamyne<sup>3</sup>: for there he was martyred and buried. But Men of

<sup>1</sup> Cf. *The Marvellous Adventures of Sir John Maundeville*, Kt. . . ., Edited . . . by Arthur Layard, Westminster, Archibald Constable, 1895, ch. 16, pp. 212-213. The chapter is entitled thus: "Of the judgments made by St. Thomas; of Devotion and Sacrifice made to Idols in the City of Calamyne; and of the Procession in the going about the City."

Another modern English edition, written in archaic English, gives a picture of a reliquary, from one of the apertures of which, on the sides, there protrudes an arm, the hand pointing heavenwards. The title is: *The Voyage and Travaille of Sir John Maundeville, Kt. . . .* Reprinted from the Edition of A.D. 1725. . . . by J. O. Halliwell. . . . London. . . . M.D. CCC. LXVI.

<sup>2</sup> Ma'abar (Coromandel Coast).

<sup>3</sup> Where did Sir John get at that name? If he has merely concluded from the Roman Martyrology that the Calamina whence St. Thomas' relics were carried to Edessa (see under July 3) was the same as Mylapore, why did he not write the name correctly? He is the first European traveller in whom we find the name. And from his context it can apply to no other place but Mylapore. Did he then hear in Malabar the name Calamyne (Calamide?) applied to Mylapore? That would go a long way

Assyria bare his Body into Mesopotamia into the City of Edessa, and after, he was brought hither again.<sup>1</sup> And the Arm and the Hand that he put in our Lord's Side, when He appeared to him after His Resurrection and said to him, '*Noli esse incredulus, sed fidelis*' (Be not faithless, but believing), are yet lying in a vessel without the Tomb. And by that Hand they make all their judgments in the Country, whoso hath Right or Wrong. For when there is any Dissension between 2 Parties, and each of them maintaineth his Cause, and one saith that his Cause is rightful, and that other saith the contrary, then both Parties write their Causes on 2 Bills and put them in the Hand of Saint Thomas. And anon he casteth away the bill of the wrong Cause and holdeth still the Bill with the right Cause. And therefore Men come from far Countries to have Judgment of doubtful Causes, and other Judgment use they not there.

"Also the Church where Saint Thomas lieth, is both great and fair and full of great Simulachres, and those be great Images that they call their Gods, of the which the least is as great as two Men."<sup>2</sup>

Of Sir John de Mandeville himself we know next to nothing. The date and place of his death are alike disputed. We are not even sure that his name is not a pseudonym. But it is sufficient for us that the book bearing his name appeared first between 1357 and 1371, fully a century before the Portuguese conquest of India.<sup>3</sup>

Something very similar is related by Jean Aerts of Mechlin, a priest, according to his own testimony.<sup>4</sup> If his MS. can be

to settle the many discussions on the whereabouts of Calamina, and all the early texts quoted by Mgr. Medlycott as containing the name would be so many new arguments proving that Calamina is Mylapore.

<sup>1</sup> Thanks to Sir John for the information that the body of St. Thomas was brought back from Edessa to Calamye, in Mabaron, by which he no doubt understands Mylapore on the Coromandel Coast. We have some idea that the body was never carried to Edessa, and we have at least one medieval Syrian writer who thought so too.

<sup>2</sup> In the last paragraph one might think that Sir John copies Odoric of Pordenone or Marco Polo; he does it however in such a way that one cannot feel sure. The text continues: "And, amongst these, there is an Image more great than any of the other, that is all covered with fine gold and precious Stones and Rich Pearls, and that Idol is the God of false Christians that have denied their faith." Follows a description of that idol, with acts of self-immolation, much in the style of Odoric and Marco Polo, but with flourishes that seem new.

Elsewhere we shall have to insist that, when the Portuguese first came to India, large numbers of people were said to have apostatised on the Coromandel and Fishery Coasts, though they still considered themselves as belonging to the caste of the Christians.

<sup>3</sup> Cf. E. B. Nicholson and H. Yule on Mandeville (Sir Jehan) in *Encycl. Britann.*, 9th ed., Vol. XV.

<sup>4</sup> Cf. *Un Voyage au XV<sup>e</sup> siècle. Récit de l'expédition en Orient du Grand Facteur du Portugal et de Jean Aerts de Malines (1481-84)*, par

relied on, he undertook with the Great Factor of Portugal a journey to Palestine, Egypt, Arabia, and even the Great Indies, between 1481 and 1484, or some 16 years before Vasco da Gama's expedition. From Arabia the party, which appears to have gone in search of Prester John, went eastwards, traversed many countries, and came to Makeria (*dans la Makeria*), a place which Emmanuel Neeffs, beyond whose study we have no information, identifies with the country of Mekran, on the coast of the Persian Gulf. This country was dotted with fine towns, and the party took nine days to cross it <sup>1</sup>

"Suddenly and without giving any detail, the MS. takes us to the Great Indies, to the town of Calamina, where St. Thomas suffered martyrdom, and where he reposes in flesh and bone in a beautiful reliquary (*châsse*). The Assyrians indeed had one day translated in great pomp the Apostle's relics to Edessa, but they had subsequently been brought back to Calamina. The hand and the arm with which the unbelieving Apostle had touched the Redeemer's wounds are not enclosed in the tomb where his body is kept.<sup>2</sup> The judge of the place uses them like an instrument which decides altercations and points out in doubtful cases which of the two parties is in the right. The suitors write down their complaints, and, when they deposit these writings into the martyr's hand, it rejects the document containing the inadmissible plea."

Neeffs, who rarely quotes the MS. *verbatim*, rightly compares this statement with Sir John de Mandeville's. To us the two statements sound so much alike, and so much in Jean Aerts' account appears to be fanciful that we doubt his having visited Calamina or Mylapore, and many other places which he mentions.<sup>3</sup>

Hardly less curious than our extract from Sir John de Mandeville is what we read in Barbosa, a Portuguese, who wrote in India between 1500 and 1516. Though there is nothing to show that Barbosa visited Mylapore, his work bears evidence of painstaking study. He is extremely well informed on India and the Far East. In his account of Mylapore and

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Emmanuel Neeffs, Louvain, Ch. Peeters, 1873. The name of the factor is nowhere given. At p. 32 we hear of the Duke of Permeren. F. C. Danvers, *The Portuguese in India*, London, 1894. I. 29, speaks of the mission of Father Antonio de Lisboa and Pedro de Montaroyo. Sent to discover Prester John's country, they seem to have gone no further than Jerusalem. Their journey would have been between 1481 and 1487. Pedro de Covilhão and Afonso de Payva, who left on a similar journey on May 7, 1487, were more successful.

<sup>1</sup> Might this Makeria not be Malabar or Maabar (the Coromandel Coast)?

<sup>2</sup> What about the inconsistency of saying in one place that the body was in a reliquary, and in the next that it was in a tomb?

<sup>3</sup> We must return to him elsewhere and show that he has copied from others some of his information.

St. Thomas he brings us back, but on independent testimony, to some of the legends recorded by Marco Polo. If he did not come to Mylapore, he must have obtained his information in Malabar from the St. Thomas Christians, or from 'Armenians,' and Europeans, who had visited the place. We quote from him here only what pertains to the arm of the Saint.

"They say," Barbosa writes, "that, on burying him [St. Thomas], they could never put his right arm in the tomb, and it always remained outside; and, if they buried him entirely, next day they found the arm above the earth, and so they let it be. The Christians, his disciples and companions who built the said Church [of Mylapore] and the Gentiles already held him for a saint, and honoured him greatly. He remained thus with his arm outside of the grave for a long time, and they say that many people came there from many quarters in pilgrimage, and that some Chinese came also, who wished to cut off his arm, and carry it away as a relic, and that when they were about to strike at it with a sword, he withdrew his arm inside, they say, and it was never seen again.<sup>1</sup> So he remains still in that hermitage, very humbly, and lighted up by the grace of God, because the Moors and Gentiles light him up, each one saying that he is something belonging to them."<sup>2</sup>

Among the information collected in 1531 by Miguel Ferreira from Muhammadans and Hindus, from natives of Mylapore and foreigners, we have the usual story of the log; but in

<sup>1</sup> This mention of the Chinese is less preposterous than may appear at first sight. Chinese ships frequented Ceylon and the Coromandel Coast and Malabar till about the time of the Portuguese. Certain ruins near Negapatam, now demolished, which stood on the site of the Jesuit College later transferred to Trichinopoly, were ascribed to the Chinese. Moreover, there might be question of Chinese Christians of the Middle Ages, anxious to possess some of the Saint's relics. Bishop de' Marignolli (1349) wrote about the earth of St. Thomas' tomb (Yule, *Cathay*, 1866, I. 376): "And when this earth is taken in a potion it cures diseases, and in this manner open miracles are wrought among Christians and among Tartars and Pagans." Whereupon Yule remarks: "The mention of Tartars here is curious, and probably indicates that the Chinese ships occasionally visited Mailapur. The Chinese are constantly regarded as Tartars at this time." On the other hand, Tartar might mean only Muhammadan. And, in view of the other explanations given a few years after Barbosa, we cannot press the point that the Chinese would have come to cut off St. Thomas' arm.

<sup>2</sup> Cf. *A description of the Coasts of East Africa and Malabar in the beginning of the sixteenth century by Duarte Barbosa, a Portuguese*. Translated from an early Spanish manuscript in the Barcelona Library, with notes and a preface by the Hon. Henry E. J. Stanley, London, Hakluyt Society, 1876.

No facts later than 1514 occur in the book. The author was 16 years in the Indian Ocean. In that case he could not have returned home before 1515. He could hardly have visited all the places he describes. His book is less a history than an itinerary. The preface, by the author, in the Portuguese edition of Lisbon (1822) says that the book was finished in 1516.

this case St. Thomas dragged it to where a *jogī* was living. The *jogī*, seeing that the Saint wanted to make with it a house in his own grounds, killed his own son and accused the Saint of the murder. The usual story, but the sequel is peculiar. Later on, when St. Thomas was killed, the Christians "buried him in a chapel, which was the main chapel, on the Gospel side, which was a small house that the Saint had made for the purpose. And when he had been laid thus underground, his arm remained outside, raised, and they could not put it inside, which lasted some time thus. And a gentio, a relative of the *jogve*, in revenge entered the holy house, in which there was nobody, and, having with him a short sword (*traçado-terçado*), he went to cut off the arm; but he was struck blind of [both] eyes, and, falling on the ground, he shouted and became a Christian, relating what had happened: and he never more departed from the house and died there of old age, sweeping the house and lighting a lamp which was in it."¹

Our last proof that the story of St. Thomas' arm came from the St. Thomas Christians is that it turns up once more in a letter from Father Anthony Monserrate, S.J., to the General of the Society of Jesus. Writing from Cochin, the land of the St. Thomas Christians, in 1579, a regular account of the antiquity and customs of these Christians, he says (MS. Relation, Goa, 33, fol. 151r):—

"These Christians relate that, after St. Thomas' death, when they buried him, they never could bury his arm; it remained always outside, because, it seems, it was the arm which touched Christ Our Lord's wounds; and, on hearing of this, the Muguel [= Mogol] King came with a big army to cut the arm; which, when he wished to cut it off, hid itself, and he persecuted the Christians greatly."

In spite of all the variants of this story, the Christians of St. Thomas had, therefore, a legend about St. Thomas' arm at Mylapore. The ultimate reason for the myth may escape us, but the fact remains that the story rehearsed by Sir John de Mandeville and later writers came from India, and that in itself, and for de Mandeville's sake, is a great acquisition.

Has not hagiography to deal with many cases of Saints, whose sanctity came into popular notice because it was said that one morning their tombstone or the pavement of the Church where they were buried had been found heaved up?

While at Agra in December 1912, I was told gravely by a lady, the repository of the Agra Christian legends, that Father Santucci, S.J. (who died at Agra on August 1, 1689, and lies buried in Martyr's Chapel, *i.e.* the present Catholic Cemetery of Agra), was a very holy man, yet withal so greedy and stingy

¹ Gaspar Correa, *Lendas da Índia*, III. 420.

that they could not bury him (did he too disturb his tombstone or thrust out his arm, I forget) until they put a diamond into his mouth. I could only smile at such a piece of popular credulity, but I have often wished to be able to give a rational explanation of the popular conception of such things.

Some ten years earlier than Barbosa, in one of the earliest accounts of Mylapore dating from the Portuguese conquest, we find ourselves suddenly confronted again with some of Mar John III.'s stories. The anonymous writer, probably a Flemish sailor, did not venture beyond the Malabar Coast. How then did he get hold of the legend that for a fortnight, about the time of St. Thomas' feast, the sea could be passed on foot, and that they gave the Sacrament to the worthy and refused it to the unworthy? If he did not read this in some European book, either before his coming to India or after his return to Europe, he must have picked it up in Malabar. On the other hand, he makes about Edessa and its being a four days' journey from the tomb of St. Thomas in the sea a remark already made by John of Hese.

He writes:—

"Six days from Coloën,<sup>1</sup> is a town which is called Lapis,<sup>2</sup> and near by is Saint Thomas in the sea.<sup>3</sup> It is there that for a

<sup>1</sup> Quilon. They arrived at Cochin on Nov. 2, 1502, at Quilon on Jan. 3, 1503, and left Cannanore for Portugal on Febr. 12, 1503.

<sup>2</sup> No other place can be intended by the Latin word Lapis (=a stone) than Mylapore. But the name is a most unexpected one in a Flemish narrative, of which no Latin original has been traced. How shall we account for it? Perhaps, some Indian Christians applied to Mylapore the name Calamina and explained it, as some Syrian Christians do now, as meaning Galmona (Syriac) or hillock; or again they may have referred to Little Mount, *Chinna Malai*, a bare rock, which according to most of them is the place of St. Thomas' martyrdom, or at any rate the place where he was first wounded. If our first surmise is correct, we might have here the earliest attempt at the meaning of Calamina. More than one author writing in India has derived Calamina as meaning, in Tamil, 'on the rock.'

<sup>3</sup> The expression 'St. Thomas in the sea' either alludes to the submerged Calamina or echoes the medieval descriptions of Mylapore which speak of it as on an island, in imitation no doubt of the Arabs, who frequently used the word 'island' in connection with places which are not islands. Is it perhaps called so in imitation of 'Beth-Tuma,' 'St. Thomas' house'? Did the Syrians call it so? If they did, we should press the fact that the merchant Sulaiman about 841 referred to it. Anyhow, 'S. Thomé,' as a place-name for Mylapore, is of later origin. The Portuguese historians say that Mylapore received its name of S Thomé from the Portuguese who settled there after 1522.

Is it a fact that the *Acta* (I have no copy either of the *Acta* or of the *Passio* or of the *Miracula*) says that St. Thomas "built a spiritual palace under the sea" for King Gondophares? Cf. Mrs. E. A. Gordon, *Asian Christology*, Tôkyô, Maruzen & Co., 1921, p. 244. The Syrians of Malabar and the R. C. Christians now at Mylapore will have it that Kândāpa Rājā (Gondophares?) reigned at Mylapore, and they speak (or at any rate they spoke 300 years ago) of his palaces as lying buried in the sea in front of Mylapore.

fortnight, about the time of his festival, the sea may be passed on foot, and they give the Sacrament to all who are worthy to receive it, and refuse it to the unworthy. And this place is four days distant from the great city of Edissen,<sup>1</sup> where he built the large palace.<sup>2</sup> But this above-mentioned town of Lapis is for the most part ruined,<sup>3</sup> and the Christians inhabit it on condition of paying a tribute,<sup>4</sup> and everybody, including the king and queen, walks naked, with the exception of their loins, which are covered."<sup>5</sup>

#### Document 2.

[P. 29] *Narrative of Lord Odilo, Abbot of Cluny, about a certain miracle of the Apostle St. Thomas.*<sup>6</sup>

1. Brother Odilo, Abbot of Cluny, wishes his friend health in the Lord.

<sup>1</sup> Evidently Edessa in Mesopotamia; but the distance from Mylapore would be four months rather than four days. John of Hese had written before our Flemish sailor that the town of Hulna and the body of St. Thomas are directed towards Edessa, and that Edessa is four days from it. Cf. Germann, *Die Kirche der Thomaschristen*, p. 167. But, as John of Hese speaks of 'St. Thomas in the sea,' he too clearly refers to Mylapore as the place of his tomb.

<sup>2</sup> The palace built by St. Thomas for Gondophares is here placed at Edessa. We should rather think that the St. Thomas Christians of Malabar spoke of it as at Mylapore, ignoring altogether Sind and Edessa in the matter. One Syrian Bishop of Malabar in 1533 makes St. Thomas go to China to build the palace.

<sup>3</sup> We may note here once more that Mylapore was destroyed by 1503. That too is what the Syrian Bishops wrote from Malabar in 1504.

<sup>4</sup> Literally: "and the Christians live therewith (? accordingly) on tribute." If this means that they lived there (at Mylapore) on condition of paying tribute, the conditions of life prevailing in Bishop de' Marignolli's time were reversed: for they enjoyed certain tributes then, as did the Christians in the chief harbours of Malabar.

<sup>5</sup> Cf. *Calcoen: A Dutch narrative of the second voyage of Vasco da Gama to Calicut. Printed at Antwerp circa 1504.* With introduction and translation by J. Ph. Berjeau, London, Basil Montagu Pickering, 196. Piccadilly, 1874.

On the cloth cover, a small strip of paper with the following title: *Calcoen: A narrative of the second voyage of Vasco da Gama to Calicut, 1502.*

The book contains the Dutch text (Gothic letters) and an English translation. No pagination.

Calcoen is not the name of the author. It represents Calicut. And here we may perhaps note that the German name for turkey, *Calcutische Hahn*, and the Flemish name, *Kalkoen*, is due to the notion that the bird was introduced from Calicut; yet, it came no more from Calicut than it did from Turkey. Cf. *Hobson-Jobson*, 1st ed., s.v. Calico.

<sup>6</sup> In Migne (*P.L.*, tom. CLXXII, coll. 1331-32) this letter is headed thus: "Letter of the Lord Odo, Abbot of St. Remy's of Rheims, [written] in the year of the Lord 1126 to Count Thomas, about a certain miracle of St. Thomas the Apostle." For all the rest the letter in Migne agrees with our Document 2. Father Vincenzo de S. Maria also gives 1126 as the year of the Indian Prelate's arrival in Rome. Cf. *supra*.

It is a wholesome thing for all believers in Christ's name ever to seek and hear something edifying [*P. 30*] and to learn how admirable the Lord is in His Saints. Knowing that you are eager to hear such things, I wish to write to you, according to your recommendation and request, what I saw and heard at the Roman Court.

"This year, to wit, on the Friday after the solemnity of Our Lord's Ascension, I stood in the Lord Pope's presence to talk about our affairs, when lo! someone came to announce that the Bizante, or the Emperor of Constantinople's, ambassadors were outside. The Lord Pope rejoiced at the arrival of so distinguished an embassy, and sent a Bishop in attendance on him to introduce them honourably and present them to him. They came, saluted the universal Pope and most of the members of the Court, and, in answer to the questions put them about the Emperor's health and the quality of their party, they answered honourably enough. The reason why they came was this.

2. With them there was an Archbishop of India, a man of rather distinguished appearance, and pretty eloquent, judging from our knowledge of his language (*juxta suae linguae notitiam satis eloquentissimus*), who, having lost by death the company and support of his prince, had come long before (*jam pridem*) to the said Emperor to seek his advice.<sup>1</sup> The

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A note (*ibid.* in Migne by Mabillon?) says: "This letter of Odo, Abbot of St. Remy's at Rheims, was written about the year 1135: for the next year, after his return from Italy, he granted a property (*fundum*) for building the Carthusian house of *Mons Dei*. Count Thomas, to whom the letter is addressed, appears to be Thomas de Marla, lord of *Codicicacum* Castle."

I am unable here to settle whether Document 2 was written by Odo, Abbot of St. Remy's, or by Odilo, Abbot of Cluny. In the *Catholic Encyclopedia*, New York, I find only two Odilos or Odos of Cluny, and their dates do not tally with the story: St. Odo, second Abbot of Cluny (*b.* 878 or 879; *d.* 18th Nov., 942), and St. Odo, fifth Abbot of Cluny (*b.* circa 962; *d.* 31st Dec., 1048).

We may remark that our letter does not mention Pope Callixtus II., who had died in 1124, two years therefore before the date assigned to the letter by Migne. Yet, it professes to have been written the very year of the arrival in Rome of the Indian Archbishop (see §1). If, therefore, the year 1126 of Migne is correct, the Archbishop did not come to Rome in the lifetime of Pope Callixtus II. If the date were about 1135, we ought perhaps to argue, from the many discrepancies in Document 1, that there is question here of another Indian Prelate. But what of the many points of resemblance?

<sup>1</sup> One does not understand why an Indian Archbishop should have come for advice to the Greek Emperor after the loss of his prince, a temporal prince, no doubt, say a Christian kingly, or why this Prince should have accompanied the Archbishop on his journey. What authority could the Emperor of Constantinople have had in India, in 1122? If the prince had died in Malabar or had come from Malabar—and indeed, the Christians of Malabar seem to have had a King of their own at the date in question—the Greek Emperor might have at most recommended to the

Emperor having listened to his request and having given him a prince from among his courtiers, he started going home, as if his business was concluded. On the way, he lost his new prince, death cutting him off. Having buried him, he returned to the Emperor to relate the sad event and express his sorrow. The Emperor, consoling him, told him not to grieve, and in his kindness gave him another prince. Cheered, the Archbishop resumed his journey, but failed to complete it: indeed, sudden death carried off this second prince, and, redoubling the Archbishop's grief, troubled him exceedingly. He did not know what to do. He hesitated whether he should return to the Emperor or continue on his way and leave unfinished what he had come for. However, the resolution of his manly spirit spurned the loss and danger threatening him. Comforted by the encouraging words of his companions, and told not to despair, he returned to the Emperor and presented himself to him once more, the bearer of dire misfortune.<sup>1</sup> On hearing the unexpected news, the Emperor was startled, and refused to send a third prince, saying that he had done enough for the Archbishop.<sup>2</sup> With much trouble and many tears the poor Archbishop obtained leave to go for advice to the Roman Court, and to take with him the Emperor's ambassadors and a letter of recommendation from him.<sup>3</sup>

3. While at the Court, he declared to some of the palace inmates that he was at the head of the Church where the body of the blessed Apostle Thomas was said to be lying. Among

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Hindu Rajas of Malabar a person of his or of the Archbishop's choice, but we see the Emperor despatch with the Indian Archbishop one of his own familiars, the idea being no doubt that this nominee was to take the place of the deceased prince. Would not such a nomination have suited Mesopotamia better than Indian conditions? Or must we suppose that commercial relations between the Greek Empire and Malabar were still of such a nature that the Greek Emperor could exercise his influence in favour of the Malabar Christians?

<sup>1</sup> Document 1 states that the Prelate arrived at Rome after a year's journey. Alberic's Chronicle (quoted by H. K. Mann) says he had arrived at Constantinople (1122?) after a year's journey. Here we are told that he had come to Constantinople a long time before his coming to Rome. Indeed, if after his first arrival at Constantinople he turned homewards twice, and twice returned to Constantinople without completing the homeward journey (Doc. 2, § 2), he ought to have left India several years before coming to Rome.

<sup>2</sup> Did the Emperor suspect foul play after the thrice-told tale of the prince's death?

<sup>3</sup> How different from Alberic's Chronicle, where the Pope's legates bring the Indian Prelate from Constantinople to Rome.

What advice could the Prelate receive in Rome about the death of his three princes? Was the Pope to send with him a fourth one? Two centuries later, both the Christians and the Hindus in India were wishing that the Latins might come and occupy the Indian seas, so as to oppose a barrier to the Muhammadan invasions. Was this too discussed? What of the pallium?

other things which he related about the position of the Church, its rich treasury, and the variety of its ornaments, there was one which one cannot hear without astonishment. The said Apostle's Church is surrounded on all sides by a very deep river: 'but, for eight days before the feast and as many after it, the waters flow off and leave the river so dry that a seven year old child can cross it. On the very day of the feast, the chiefs of the whole province and all the clergy and people assemble; and, after many tears and deep sighs, the Archbishop with the clergy of his Order approaches the bier (*feretrum*) of the blessed Apostle,<sup>2</sup> takes from it very reverently the body, places it with honour on the pontifical chair, and, prostrating himself the first at the feet of that powerful advocate, he honours him with his gift and oblation. The blessed Apostle raises his arm, opens his hand and receives gratefully whatever is offered him [*P. 31*] by all the followers of our faith. But, if a heretic mixed up in the crowd tries, as if out of devotion, to place something in the Apostle's hand, he closes his hand and refuses to accept his sinful gifts.<sup>3</sup>

4. When the Lord Pope heard of this from some, he called for the Bishop and wished to forbid him under anathema to continue spreading such untruths in the palace.<sup>4</sup> Indeed, what he had said about the Apostle appeared to be contrary to the truth. But the Bishop asserted before them all that nothing was more true, and, with the Lord Pope's permission he swore on the holy Gospels that it was so. Finally, the Lord Pope and the whole Court believed him and said that the Apostle could obtain from Almighty God even greater miracles.<sup>5</sup>

Dr. W. Germann, that diligent student of the St. Thomas story, had long ago anticipated our disquisitions on John III. As his account contains some elements not discovered by us

<sup>1</sup> A church is not surrounded on all sides by a river unless it stands on an island in the river. Document I speaks of a lake. Anyhow, we are not told here about a mountain with a tower, and a church on the top of the tower. No mention either of the twelve monasteries in honour of the twelve apostles.

<sup>2</sup> No ciborium? No concha?

<sup>3</sup> No Communion here; no instantaneous deaths of infidels.

<sup>4</sup> The Pope is horribly scandalised at a much milder type of story than that of Document I.

<sup>5</sup> In some copies of the letter the Abbot seems to continue (see our quotation from Raulin, *supra*): "But, as we were not then at the Court, we gave our opinion on this matter above, where we related these things (at the end of Dissertation 2)." The Abbot's opinion would be worth having. Could any of my readers find it out? Does he mean that he was present at the arrival of the embassy, but had left by the time the Indian Archbishop started telling his stories? But does he not profess to relate to Count Thomas what he saw and heard at the Roman Court? (Cfr. § 1).

and sums up our two documents above, we translate it here in its entirety.<sup>1</sup>

"We have two mutually independent accounts of the visit of this John to Rome: one in the *Chronicon Alberici Monachi*, published by Leibnitz in his *Accessiones Historicae* (II. ad an. 1122); the other in *Maillonii Vetera Analecta* (Parisiis, p. 464), consisting of a letter by Abbot Oddo of St. Remy's to a certain Count Thomas. Although Alberic is acknowledged a trustworthy writer, yet the preference must be given to Oddo, since he was present when John was presented to the Pope. Oddo was just transacting business with the Pope, a few days after Ascension Day, in the year in which he wrote to his friend, when envoys from the Emperor of Byzantium were announced, who had come to introduce the Archbishop of India, *vir satis honestae formae et juxta linguae suae notitiam eloquentissimus*. The Indian Prelate, having lost by death his companion and helper on the journey to Europe, a prince,<sup>2</sup> had turned for help to the Emperor, and, after receiving from him one of his familiars, [P. 165] he had begun the return journey, when this Prince too died on the way. The Indian hastened back, and a Prince who was given him died again. The Emperor refused him a third companion, and only after many tears was he allowed to go for advice to the Roman Curia and to have envoys with letters of recommendation adjoined him. When he came to the Curia, he related to some of the Pope's entourage that he was the head of the Church where the body of St. Thomas rested. The great Church was surrounded by a stream; but, eight days before and eight days after the Apostle's feast, which was celebrated with great concourse, the water flowed away, so that one could go to it dry-shod. What he related next of the body of St. Thomas, that on the day of his feast he was placed on the episcopal chair, and then stretched forth his arm, and opened his hand to receive the gifts, and that, when a heretic approached and wished to give him his offering, he at once closed his hand, this appeared so incredible that the Pope, on hearing of it, called for the Prelate and forbade him to spread any more such stories in the palace; he even wanted to forbid it him by threatening him with anathema. But the Prelate insisted before them all that it was so, and swore to it on a book of the

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Unless we have a more authoritative account of the proceedings, we discuss at random. Someone in Europe ought to examine the many authors mentioned by Raulin as having written on this subject. Probably many other details could be gathered from the different accounts and compared. Raulin's bibliography can be supplemented with the many references given by the Bollandists in *Bibl. Hagiogr. Latina* . . . (K.-Z.), Bruxellis, 1900-1901, pp. 1180-1181.

<sup>1</sup> *Die Kirche der Thomaschristen*, Gütersloh, 1877, pp. 164-167.

<sup>2</sup> A new detail, if correctly represented by Germann.

Gospels. Thus far Oddo whose letter bears no date, but must have been written before 1136, since he returned to France that year.<sup>1</sup>

"The year is mentioned by Alberic. It was the fourth of Pope Calixtus, therefore 1122. Alberic has, besides, a number of additional details. He knows the Indian's name, John; he gives him the rank of Patriarch, and makes him come to Constantinople to receive the pallium; he says that, as he had come from furthest India (*quae ultima finem facit*) he had spent a full year on the way. Calixtus had sent envoys to Constantinople, with whom the Patriarch conversed through a dragoon, and, when he learned that Rome was the chief town of the whole earth, he travelled thither with the interpreter<sup>2</sup> and gave to the Pope and the Cardinals the following information:—

"His town was called Ultima (a corrupt version, instead of which the *Chronicum Belgicum* has Ulna), and was the capital of all India. Its circumference [*P. 166*] measured a four days' journey; its walls were of extraordinary height, and so thick that two Roman chariots could go on it abreast. The Phison, rich in precious stones, flowed through it, and it was inhabited entirely by believing Christians. At a small distance from the walls of the town, there lay a mountain surrounded on all sides by a deep lake; on the summit of the mountain stood the Mother-Church of St. Thomas. Round the lake were the monasteries of the twelve Apostles. During the year, the mountain was not accessible to any one; but, once a year, the Patriarch ascended it, as the water decreased for eight days before and after the Saint's feast. In the ciborium of the Church hung from silver chains a silver concha, in which the Apostle's body was preserved incorrupt, and stood upright, as if alive. Before it burned continually a golden lamp; this was always found to be full of balsam, which, when divided among the faithful, worked numerous cures. On the feastday, the Patriarch with the Bishops lowered the concha containing the body, which had still all its former shape, so that even the clothes were intact, and he placed it before the altar on a golden seat. After the Mass, the hosts were presented to the Apostle, who received them in his outstretched right hand, and the faithful approached one by one to receive them from his hand. Moreover, when an infidel or a heretic or one stained with sins approached, the hand closed in sight of all. The person concerned either repented at once, or died.

"With what doubts was the story of the Indian Archbishop first received at Rome, and what has legend added to it

<sup>1</sup> This reflection is to be found in our notes to Document 2 above.

<sup>2</sup> Some of these details, *e.g.*, about the interpreter, are new for us.

in a century and a half? Legend has enriched it correctly in only one point: the position of the mountain outside the town, the Church on the mountain, and the fact that the water which flows around always rises or falls according to the monsoon.<sup>1</sup> That an Eastern Prelate came first to Constantinople and then to Rome cannot be doubted; it was repeated in later centuries, as also the taking of an oath,<sup>2</sup> but who can say what the foreigner, who did not know Latin, swore to? That he belonged to the same Christian community as the Indian Christians, may also be granted. For the rest it is plain that he must have been an arrant impostor; [P. 167] and it is likely, from what he said of the body of the Apostle, that he was not an Indian,<sup>3</sup> but rather some adventurer Bishop of Mesopotamia. Even John de Hese's Itinerary, of the 15th century,<sup>4</sup> which takes from our account the whole Communion scene, knows that the town Hulna with the body of the Apostle is turned towards Edessa, from which it is a four days' journey distant.<sup>5</sup>

"We have entered upon the period of the Crusades, during which legend and poetry, which had borrowed from the Indian Church the materials for the story of Barlaam and Josaphat, were at work to make of Prester John a king of India, and to spin out always further the legends of the Apostle Thomas. It may be of interest to the historian of literature to follow up these legends in our classics, in Percival and Titivel; but the Church historian loses the clue, and oblivion overtook the real Indian Christians; they became a legend.<sup>6</sup> However, at the Papal Court, the centre of Christian life, they did not lose the clue, and, while the legend was busily spinning out, they thought earnestly of reducing to the Papal power the Christians of the Far-East."

Doubtful as we are about Mar John's character and the

<sup>1</sup> These details, which give us no little trouble, Germann accepts therefore as genuine Indian touches, but as later additions. How could they have been added correctly later?

<sup>2</sup> I do not know to what other visit and oath Germann alludes. Perhaps to the Bishop of Gabala's visit to Rome in 1145. Cf. *Encycl. Britann.*, 9th ed., XIX, p. 714, col. 1.

<sup>3</sup> Here we take exception to Germann, whose opinion rests on the further opinion that the relics were not at Mylapore, but at Edessa.

<sup>4</sup> "Printed in Oppert's *Presbyter Johannes*, 1864, p. 180 sqq." (*Germann*). The Bollandists in *Bibl. Hagiogr. Latina* ... (K.-Z.), Bruxellis, 1900-1901, p. 1181, refer to Johannes de Hese's *Itinerarius*, printed Davenport, 1499; Antverpiae, G. Back, 1500(?); Davenport, 1504; Davenport, 1505.

<sup>5</sup> What is John of Hese's authority for such a statement?

<sup>6</sup> "Vice-versâ, if the contemporary Indian collections of stories, which reached their present form mostly in the 12th century, have borrowed, besides other western materials, stories of the Bible, e.g. Jonas in the fish (*Somad*, XII., 4-5, and *Râdschatar*, IV, 503), the crossing of the Red Sea (*Râdsch.*, IV, 250), and Solomon's judgment in the *Dsang*

exact date of his journey, we leave to other writers their opinion that John III. was an Indian Bishop. What runs counter to the notions we derive from what we read in our 16th-century writers, is that, *teste* John III., there would have been yearly several Bishops at Mylapore on the feast of St. Thomas. The quotations we have adduced in our Part I, Chapter II, lead us to expect only one Bishop in the whole of Southern India, namely a Bishop in Malabar. Other Bishops would have been found in Sokotra, China, and in other parts far away from Southern India. On the other hand, we must confess that our knowledge of the conditions prevailing in Southern India at the time of Mar John III. is of the vaguest. There may also have been a Bishop in the Maldives and in Ceylon, as was the case at an earlier time. Still, even if there had been several Bishops in Southern India at the time, we do not easily suppose that they met every year at Mylapore for the feast.

Father Paulinus a S. Bartholomaeo, referring to Le Quien's *Oriens Christianus*, col. 1272, states that about 1129 Mar John, Bishop, was sent to India by the Katholikos of Bagdad.<sup>1</sup> He states again that Mar Sapor and Mar Proudth came from Babylon to Malabar in 925 (not in 850 or 880), and that they were followed by John III., John IV., Jaballaha, Joseph I., Junabas, Mar Joseph II., Mar Joseph III., and Mar Abraham, who died in 1596. Paulinus' Mar John of 11:9 and Mar John III. would be our Archbishop John who went to Rome in or about 1122.

Father Bernard of St. Thomas, T.O.C.D., writes to me from Mangalore (3-10-1921) that, from the papers he has seen about Mar John III., he has no doubt that he really was a Bishop, but that native writers say nothing about his having gone to Rome on a visit to the Pope.<sup>2</sup>

What is the origin of the following story?

"Bishop Eschilinus has left written in his book the following miracle wrought through the Apostle St. Thomas in connection with Holy Mass. On the eve of the feast of St. Thomas in December, the Bishop of the town where the body

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*lun*, we have undoubtedly in this positive material a proof of the influence of the Indian Christians. Weber, *Ind. Skizzen*, p. III. Else, with regard to the Indian elements of our contemporary western literature, we should ascribe to the Indians considerable historic sense, which otherwise is not characteristic of them."—(*W. Germann*.)

This note is far from clear to me, for which perhaps my limited knowledge of German is responsible. Yet, I have consulted in vain not a few of my friends for a satisfactory explanation of the last sentence.

The 'Rädschata,' must be the Rājatarangini, a Kashmir chronicle. 'The Dsanglun' is a Tibetan work, the text of which, with a German translation, was published by I. J. Schmidt in 1843.

<sup>1</sup> *India Orientalis Christiana*, p. XXII.

<sup>2</sup> Father A. Stockman, S.J., writing about Prester John (*Cath. Encyclopedia*, New York, XII, 400c), speaks of the 'mythical' journey to Rome of a certain Patriarch of India in 1122, and his visit to Callistus II.

of the Saint was kept opened the tomb of the Apostle, and, placing inside, in the hands of the Saint's body, a severed dry vine-shoot, closed the tomb. The next day, the feast of St. Thomas, when the Bishop returned to the tomb and looked in, he was greatly astonished to find that the dry vine-shoot which he had left in the Saint's hand had become green and bore a bunch of grapes. He plucked the bunch and extracted the juice from the fruits. The purified wine thus obtained was just sufficient for the Mass of that day. All those who heard the Mass were filled with incredible joy."<sup>1</sup>

After long research I succeeded in tracing another allusion to the same story. Raulin, holding that part of St. Thomas' body was found by the Portuguese, says that he does not feel moved by the story of Peter de Natalibus in his *Catalogus Sanctorum*, Bk. 6, ch. 43. The story notwithstanding, he maintains that the body may have been partly at Mylapore. Peter de Natalibus relates the following: Yearly, on the eve of St. Thomas' feast, the Archbishop of Edessa, while intoning the antiphon at the Magnificat: *O Thoma Didyme*, opened the tomb, or the silver casket (*loculus*) hanging from silver chains,<sup>2</sup> and placed into the Apostle's hand a dry vine-stock. The next day, to the astonishment of all, it was found green and covered with a fresh bunch of grapes.<sup>3</sup>

<sup>1</sup> This was found in a Tamil work *Viyashakishamai puthunmai* [Thursday miracles], Pondicherry, Catholic Mission Press, 2nd ed., 1902, p. 164, 48th miracle. Did not Father de Rossi, S.J., translate his series of miracles for every day of the week from a collection composed and published in Europe?

Father Bernard of St. Thomas' letter of Oct. 3, 1921, referred me to this Tamil work, saying that he had read there about Mar John III. The passage which we have found, and which one of our Tamil Fathers in Kurseong has translated for us, says nothing of Mar John. Are there passages about Mar John in the same work or in other editions or volumes of the same work?

The Nestorians in India knew no feast of St. Thomas on December 21. A Latin writer, however, reading about the Saint's feast, would naturally have concluded to the feast of December 21, the Roman Martyrology merely commemorating on July 3 the translation of St. Thomas' relics to Edessa.

H. Yule speaks of barefaced fictions about Prester John by John of Hese, a contemporary of John de Mandeville, and of his rehearsing the old tales of the miraculous body of St. Thomas. Cf. *Encycl. Britann.*, XIX (1885), p. 717. To what extent do these tables agree with those discovered by us?

<sup>2</sup> The silver *loculus* and the silver chains may be a touch of Edessan archaeology, as we have shown in this chapter; but any student of the St. Thomas legends might have sandwiched it into his story. And why should the silver casket be mentioned in conjunction with the word 'tomb'? Have we not here a blending of the tomb of Mylapore with what early writers say of the relics at Edessa?

<sup>3</sup> Cf. Raulin, *Historia Ecclesiae Malabaricae*, Romae, 1745, p. 377. For a short account of the story see *Vies des Saints . . . par le R. P. Ribadeneira*, Trad. par l'Abbé E. Darras, 2<sup>e</sup> ed., Paris, 1857 (Déc. 21), p. 269.

Who was Peter de Natalibus? At p. 367, *op. cit.*, Raulin calls him Peter Equilinus or de Natalibus, a Bishop, thus identifying him clearly with the Bishop Eschilinus quoted above. J. P. Kirsch, writing in *Catholic Encyclopedia*, New York, XI, 784a, says that the date of his birth is unknown, but that he died between 1400 and 1406. A Venetian, he consecrated himself to the ecclesiastical state, became a canon of Equilio (Jesolo), and was elevated to the episcopal see of that city on July 5, 1370. He is chiefly known as the author of "Legends of the Saints" in twelve books, a very valuable work with a wide circulation.<sup>1</sup>

Since the relics of St. Thomas were removed from Edessa to Chios in or about A.D. 1144, the legend recited by Peter de Natalibus must be anterior to 1144, in case it hailed from Edessa. What authority the Bishop had for placing the miracle at Edessa, I know not. Anyhow, one could not argue against its having happened at Mylapore, merely on the ground that Mylapore produced no grapes.

There were grapes at Mylapore, according to Bishop John de' Marignolli (1349), and wonderful grapes too, grapes introduced there from Paradise (Ceylon) by St. Thomas himself. After mentioning the fruits growing in Adam's garden (Ceylon), *viz.* plantain-trees or Adam's figs, *nargil* (coconuts), *amburan* (mangoes), and *chakebaruche* (jack-fruits), Bishop de' Marignolli goes on to say:

"I do not remember to have seen any other fruit-trees, such as pears, apples, or figs, or vines, unless it were some that bore leaves only and no grapes. There is an exception, however, at the fine Church of St. Thomas the Apostle at the place where he was Bishop. They have there a little viney which I saw, and which supplies a small quantity of wine. It is related that, when he first went thither, he used to carry about with him a little wine for masses (as I did myself for the space of nearly two years); and, when that was done,<sup>2</sup> he went to Paradise,<sup>3</sup> into which he found his way by the help of Angels, and carried away with him some of the grapes, the stones of

<sup>1</sup> For a short reference to him, cf. *Cath. Encycl.* IX, 746b.

The Bollandists refer to his epitome of St. Thomas' story in his works (I. 79; VI, 43). Cf. *Bibl. Hagiogr. Latina antiquae et mediae aetatis*, (K.-Z.), Bruxellis, 1900-1901, p. 1180, No. 5.

<sup>2</sup> Exhausted.

<sup>3</sup> Ceylon, according to Bishop de' Marignolli. Yule notes from Pridham's *Hist., Polit. and Statist. Acct. of Ceylon*, p. 613, that Adam's Garden is the subject of a genuine legend still existing. At the torrent of Seetla-gunga on the way to Adam's Peak, Pridham tells us: "From the circumstance that various fruits have been occasionally carried down the stream, both the Moormen and Singalese believe, the former that Adam, the latter that Buddha, had a fruit garden there, which still teems with the most wonderful productions of the East, but that it is now inaccessible, and that its explorer would never return." de' Marignolli has very much

which he sowed. From these grew the vines which I saw at that place, and from them he made the wine of which he stood in need. Elsewhere there are vines, indeed, but they bear no grapes, as I know by experience."<sup>1</sup>

Between this little excursion into the Christian folklore of Mylapore in 1349 and the story of Peter de Natalibus there is sufficient affinity to justify one in believing that the Edessa legend may have led to the one at Mylapore. Until we discover that the legend of the dry vine-stock belongs indeed to Edessa, we like to think, however, that it grew up at Mylapore.

Here is yet another extravagance. We read in the *Acta Sanctorum* of the Bollandists, under July 3:—

"These same [women Saints] are mentioned in the *Gynaecium*; added to them we there find: 'In East India, [the feast] of Blessed Clara, a Dominican virgin, daughter of the King of Calamina, who by her eminent virtues prepared for herself the way to heaven.' Pius Arthur Anthony de Balinghem took her from Seraphin Razzius, who, in the *Lives of the Saints of his Order*, p. 353, spun out a story which is as incredible as it is wonderful. No authority, no reference is given; all chronological and geographical explanation is lacking. Among other wonders here is one, by way of specimen, from it one can judge of the rest. 'In the parts of India,' says Razzius, 'St. Clara is held in such veneration that, among sixty Christian kingdoms, there are found in one kingdom alone CCC monasteries of Sisters of the Order of Preachers, which are called by the name of this St. Clara.' We require other evidence to prove such assertions. That more than wonderful Clara is not known to Marchesius and other writers. Rlanconius, Razzius' French translator, prudently omitted her."<sup>2</sup>

the same story: "[The trees of Paradise] are there [in Ceylon] still in existence, as the *Pantheon* says, and this is shown by the fruits and leaves which are sometimes carried forth by those rivers, and are known by their medicinal virtue and fragrant odours." (Yule's *Cathay*, II, 352; and see also II, 360.) de' Marignolli makes the four rivers of Paradise pass through Ceylon (*i.e.* the Gyon, Phison, Tigris, and Euphrates); but they flow also in other countries! (*Ibid.*, II, 346.)

<sup>1</sup> H. Yule, *Cathay and the way thither*, II (1868), p. 363. Grapes were grown at Mylapore in Portuguese times. Each bunch had to be protected by a leather bag against the depredations of birds and squirrels. Cf. Col. Love, *Vestiges of Old Madras*, II, 334. In the Convent of the Native Sisters, near Mae de Deos Church, at Mylapore, I noticed a big vine (January, 1923).

<sup>2</sup> Cf. *Acta Sanctorum* . . . collecta . . . a Conrado Janningo, Joanne Solerio, et Joanne Pinnio, e Societate Jesu . . . Paris, V. Palmé, 1867 (1st vol. of July or vol. 28 of Palmé's collection, p. 555).

I found this passage by good luck, while looking for St. Thomas the Apostle under July 3. Who knows what other scarce knowledge about St. Thomas, Mylapore, Calamina, and India generally, that enormous collection conceals? The systematic treatment of the St. Thomas ques-

Unaccountable as the story is, it would be worth while to trace it back to its origin. The story would be too foolish for words, had it originated from India in Portuguese times. It must go back to medieval times. Not before 1606 did a Nunnery, St. Monica's, one of Augustinian Nuns, get established at Goa. As for Dominican Nuns, there was a convent at Tarapur in the beginning of the 17th century, another at Damam, both places being on the Bombay side.<sup>1</sup> In pre-Portuguese times there were, however, in Malabar small communities of pious women, leading a life of chastity, but not as the cloistered nuns of our days,<sup>2</sup> and nuns were not unknown among the Abyssinians, the Armenians, Copts, Jacobites, and Nestorians.<sup>3</sup>

When we have to speak of Prester John we can only stammer; yet, Razzius' 60 Christian kingdoms in *partibus Indiae* seem to be echoes of Prester John tales. The expression 'India Orientalis' in de Balinghem, and 'India' in Razzius, may have been used loosely for any parts of Asia east of Asia Minor. In medieval writers it is applicable even to Armenia or Ethiopia. However, as in the 13th and 14th centuries the Dominicans shared with the Franciscans the work of evangelising the East, and as some Dominicans at least, like Bishop Jordanus of Severac and Nicholas of Pistoia, found their way to Malabar and Mylapore, we should expect that their Missionaries had preciser notions about India than their brethren in Europe. About 1360, the United Brethren of St. Gregory the Illuminator, Armenian Dominicans, had 50 monasteries with 700 Religious. In 1349, when the Missions of Persia were destroyed, the Dominicans had in Persia 15 monasteries and 11 of the United Brethren.<sup>4</sup> That was precisely the time when Europe was still full of the wildest stories about Prester John. First he had been found in India; next in Tartary; next, if not simultaneously, in Ethiopia. Some hold that the first notion about Prester John was derived

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tion is reserved by the Bollandists to December 21, which means that, as they have reached only the beginning of October, we shall not, with the present rate of progress, be privileged in our lifetime to see their conclusions. Under December 21, they will also discuss the question of Denis and of Pelagia, daughter of the King of Sandaruk.

I have discovered nothing as yet about any of the writers quoted above: de (van ?) Balinghem, Razzius, Marchesius and Rianconius. At what time did they write ?

<sup>1</sup> Cf. *O Herald*, Goa, 21 July, 1917 (*Da monja de Tarapur*), and *The Examiner*, Bombay, January 6, 1917 (*A Dominican Nun at Damam*). Both articles are by Antonio Francisco Moniz of Damam.

<sup>2</sup> Letter of Fr. Bernard of St. Thomas, T.O.C.D., Mangalore, 30.30. 1921.

<sup>3</sup> Cf. A. Fortescue, *The lesser Eastern Churches*, s.v., Nuns.

<sup>4</sup> Cf. *Cath. Encyclopedia*, New York, XII, 368. The article is silent about Dominican Nuns in the East at that time.

from an Armenian general Ivane (John), who in 1124 gained a great victory over the Crescent.

It is not impossible that one of the many Prester Johns, elusive personages though they be, had a daughter Clara who was a Nun, nay a Dominican Nun.<sup>1</sup> In this matter the Friars Preachers may have had at their disposal materials not now accessible to us. The difficulty is about the time and the place and the large number of convents said to have gone under Clara's name. Waiving that point, however,—for it is not impossible that convents of Malabar Nuns, or of Georgian, Armenian, or Ethiopian Nuns, not to speak of nunneries in Tibet and other Buddhist countries, should have been mistaken for convents of Dominican Nuns—may we not suppose that, as at least one Prester John places in his dominions the tomb of St. Thomas, our Dominican Razzius or some other earlier writer of his Order, identifying Mylapore with Calamina, as has been done so often, made of Clara, the daughter of the King of Calamina? We need hardly add that Mylapore (*alias* Calamina) never possessed a Dominican nunnery. It may be worth stating, however, that, as St. Dominic was born only in A.D. 1170, our Mar John III. cannot have had anything to do with the story.

It took a long time to kill Prester John of India. In 1177, Pope Alexander III., writing possibly to the Negus of Ethiopia, begins thus: "Alexander Bishop [or Pope], servant of the servants of God, to his very dear son in Christ, John, the illustrious and magnificent King of the Indians."<sup>2</sup> The Annals of Admont (1181) speak of "Prester John, King of Armenia and India" under the year 1141.<sup>3</sup> Matthew Paris reports the receipt, in 1237, of a letter from Brother Philip, prior of the Dominicans in Palestine, which declares Nestorianism to be predominant in 'India, the Kingdom of Prester John,' and the

<sup>1</sup> This would not have been so very foolish, if the Malabar Christians had, as they seem to have had, a Christian King of their own. Cf. T. K. Joseph, *A Malabar Christian Dynasty* in the *Trivandrum Daily News*, Febr. 25, 1922.

Diogo do Couto (*Da Asia*, Dec. XII, Bk. III, ch. 5) thinks that Thomas Cananeo, whom he places about A.D. 811 (but whom the Malabar accounts place in about the year 345) might have been "the Kinglet of whom St. Antoninus writes in his history that he sent every year a present of pepper to the Sovereign Pontiff, because at that time the tomb of the Holy Apostle was much frequented by the Christians of Europe, and Thomas Cananeo would have sent him that present through them." A very surprising reference! Pepper would indeed have come from Malabar. Could any of our readers lay hands on the text in St. Antoninus and determine the time when this took place? Evidently St. Antoninus means that Christians from Europe came in pilgrimage to the tomb of St. Thomas at Mylapore.

<sup>2</sup> *Encycl. Britann.*, 9th ed., XIX (1885), p. 715.

<sup>3</sup> *Cath. Encycl.*, New York, XII, 400, 401.

most distant states of the East.<sup>1</sup> Friar John de Monte Corvino writing from Cambalik (Pekin) on January 8, 1305, says that 6 years before, at a place fully 20 days from Cambalik, he had converted a Nestorian King, George, "of the illustrious race of the great king who was called Prester John in India."<sup>2</sup> And Friar John de Monte Corvino had been sufficiently long in Malabar and on the Coromandel Coast to make us suspect that some of the Christian Princes in China were connected with Christian Princes in India. In 1330, Pope John XXII. sent Bishop Jordanus to Quilon with a letter which began as follows: "*Nobili viro domino Nascariorum et universis sub eo Christianis Nascarinis de Columbo, venerabilem fratrem Jordanum.*"<sup>3</sup> The chief of the Nazarene Christians at Columbo or Quilon may have been a petty Christian King, the Baliarte of Portuguese writers and Malabar traditions. As late as 1439 Pope Eugene IV. sent envoys (to the Christian King of Malabar?) with a letter which commenced thus: "To my most beloved son in Christ, Thomas, the illustrious Emperor of the Indians, health and the apostolic benediction.—There often has reached us a constant rumour that Your Serenity and also all who are the subjects of your kingdom are true Christians."<sup>4</sup>

"On the Catalan Map which is nearly contemporary with Jordanus, near the town of Diogil in the Province of Columbo, which includes the southern point of India proper, are read these words: 'Here reigns the King of Columbo, a Christian.' The towns of this territory are jointly indicated by a flag containing a dove with a cross; the greater importance of the town of Diogil, which we further on suspect to be Diamper, is brought out by a double cross. From this it must not be concluded that the King of Columbo, the name of which was not understood and was represented by a dove, was a Christian,

<sup>1</sup> L' Abbé Hue, *Christianity in China, Tartary, and Thibet*, New York, 1884, Vol. 1, p. 96. Henry Yule thinks there is question of the Negus of Ethiopia. Cf. *Encycl. Britann.*, XIX (1885), p. 717, n. 6.

<sup>2</sup> Marcellino da Civezza, O.M.C., *Storia Universale delle Missioni Francescane*, Vol. 3, Roma, 1859, pp. 137 n., 67 n. 1. In Vol. 6, pp. 336-340 of the same work see a discussion on the first appearance of the name Prester John. M. da Civezza thinks the name appears first in 1145, when the Syrian Bishop of Gabala was sent to Pope Eugene III. The article on Prester John in the *Cath. Encycl.* XII, 400-402, is very instructive. For other references to Prester John of India see Plano Carpini (1248), the Armenian writer Sempad (1248), and Simon Sigoli (1384) in Yule's article in *Encycl. Britann.*, XIX (1885), pp. 716, col. 2, 717, col. 1.

<sup>3</sup> Cf. Yule's *Friar Jordanus* (Hakluyt Society), p. vii.

<sup>4</sup> I take the last fact from T. K. Joseph's article, *A Malabar Christian Dynasty*, in the *Trivandrum Daily News*, 25-2-1922. He gives as reference Wadding's *Annales Minorum*, p. 60.

'Joannes de India' is mentioned in Migne's P.G.L.T. (*Patres Graeci Latine tantum editi*), Vol. 80, pp. 1015-20. I do not find the collection at St. Mary's College, Kurseong.

but that in the kingdom of Columbo, which was known in the West as a mission-station, there was a Christian Prince at the town of Diogil."<sup>1</sup>

In the reduced form in which Yule reproduces part of the Catalan Map (1375) from *Notices et Extraits*, tom. XIV,<sup>2</sup> Columbo is placed wrongly by the author of the map on the Fishery Coast, and the word Columbo is written a second time across the territory with the note: 'Christian Kingdom'. Yule has, however, suppressed the flag with the dove and the cross, as also the double cross near Diogil. The town Diogil is much too far north in Yule's map to be identifiable with Diamper in Malabar. In fact, Yule identifies it with Deogiri or Daulatabad,<sup>3</sup> and it is quite possible that there were Christians there some time before 1375.

We must remark also that above Mirapore (Mylapore), Butifilis (the Mutfil of Marco Polo, *i.e.* Motapallé in Telingana), Bangala (Bengal), and Bassia, Yule's reduced form of the Catalan Map has the following strange legend: "Here reigns [King] Stephen, a Christian. In this land lies St. Thomas. Look for the city Butifilis."<sup>4</sup>

I do not know whether the last legend has ever been commented on by any one, or what explanation of it can be devised, except perhaps that the Christians of the Coromandel Coast had till very late times a chief or captain of their own. I find nothing to help in Yule's *Cathay* and *Marco Polo*, or in the early travellers. However fanciful the position or the very existence of King Stephen's dominions may appear to us now—for they embraced the shrine of St. Thomas at Mylapore—we must keep an open mind and believe that the author of the Catalan Map, like the historian, would have written nothing for which he had not some sort of authority, either in books or from travellers. It is certainly significant that the idea of a Christian Kingdom in India persisted so long in Europe, and while so many European travellers moved freely about in the East.

Yule thinks it probable, that even in the Levant the stories of 'John the Patriarch of the Indies' may have been mingled with the rumours from the East about Prester John.<sup>5</sup> Father A. Stockman, S.J., treating Mar John III.'s visit to Rome as mythical, opines that his journey cannot have been the origin of the Prester John legend.<sup>6</sup> As his reasons do not appear to us cogent, we quote Yule.

<sup>1</sup> W. Germann, *op. cit.*, pp. 205-206.

<sup>2</sup> Cf. Yule's *Cathay*, at the end of Vol. I.

<sup>3</sup> *Ibid.*, I. CCXXX; II, 413, 415.

[Thomas' shrine.

<sup>4</sup> By some mistake Butifilis seems to be made here the site of St.

<sup>5</sup> *Encycl. Britann.*, XIX (1885), 716, col. 2.

<sup>6</sup> *Cath. Encycl.*, XIV, 400c.

"Before Prester John, *eo nomine*, appears upon the scene, we find the way prepared for his appearance by the presentation of a kindred fable, and one which certainly entwined itself with the legends about Prester John after his figure had lodged itself in the popular imagination of Europe. This is the story of the appearance at Rome (1122), in the pontificate of Pope Calixtus II., of a certain Oriental ecclesiastic, whom one account styles 'John, the Patriarch of the Indians,' and another 'an Archbishop of India.' This ecclesiastic related the most wonderful stories of the shrine of St. Thomas in India, and of the posthumous and still recurring miracles which were wrought there periodically by the body of the apostle, including the distribution of the sacramental wafer by his hand, and many other marvellous things. We cannot regard the appearance at Rome of the personage who related these marvels in the presence of the Pope as a mere popular fiction: it rests on two authorities apparently independent (one of them a letter from Odo of Rheims, abbot of St. Remy from 1118 to 1151): for their discrepancies show that one was not copied from the other, though in the principal facts they agree."<sup>1</sup>

To proceed. We said that in a letter by Prester John mention is made of the tomb of St. Thomas. Some other passages in it bear resemblance to statements made by Mar John III. and to our quotations about St. Clara.

In fact, if it could be proved that the letter was addressed to Alexius Comnenus, Emperor of Constantinople, who died in A.D. 1118, we might think that Mar John III. had been somehow connected with its composition. We shall quote of it, translated as literally as possible, whatever we find in Assemani.<sup>2</sup>

<sup>1</sup> *Encycl. Britann.*, XIX (1885), 714, col. 2.

<sup>2</sup> For the translation we help ourselves with l' Abbé Huc's *Christianity in China, Tartary, and Thibet*, New York, Vol. I (1884), pp. 92-93, and with Austen Henry Layard's in *Nineveh and its remains*, London, 1849, I, 250-254. The reference to Assemani in Huc is *Bibl. Orient.*, Vol. III, Pt. II, Ch. IX, p. 490. Layard too refers to Assemani, at p. 255 of his volume I. Huc's reference is correct enough. However, a friend of mine who searched for the passage in Calcutta at my request could not find it. "Vol. III, Pt. II" of Assemani's *Bibl. Orientalis* is the 4th volume of that collection.

Huc thought with Assemani that the letter *might* have been addressed to Emperor Alexius Comnenus (†1118). Mgr. Zaleski, after saying that the MS. (used by Assemani) is in the Vatican Library, *Codex Regius Alexandrinus* 657, p. 37, asserts that it *was* written to Emperor Alexius Comnenus, who died in 1118. Layard also states that it *was* addressed to the Greek Emperor Alexius Comnenus (*loc. cit.*, p. 250). The short extract which Mgr. Zaleski makes from it gave me the false impression that Prester John had his palace near St. Thomas' tomb. Cf. Mgr. Zaleski, *Les origines du Christianisme aux Indes*, p. 145, and his *The Saints in India*, p. 111. To spare to future investigators the serious misgivings we were under until we found an opportunity of consulting Assemani, we quote the letter as fully as we can.

The letter in question appears in Assemani only in part. Herr Zanke in an elaborate treatise on Prester John gives a list of close on a hundred MSS. of it. It purports, according to Yule, to have been addressed by Prester John to the Greek Emperor Manuel, who reigned from 1143 to 1184. About 1165 it became widely circulated.<sup>1</sup>

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"This letter," writes Assemani (*Bibl. Orientalis*, tom. III, Part II, or Vol. IV, p. 490, *sqq.*), "exists in a Latin MS. of the Vatican Library, *Codex Regius Alexandrinus* 657, fol. 37 *sqq.* Although it is full of boasting and contains many fabulous things, the Latin translator<sup>2</sup> seems to have added a few things to it. However, as it confirms the account of the Bishop of Gabala<sup>3</sup> and will not be unpleasant to the reader, neither is it foreign to our purpose, we proceed to insert here fragments of it: for we omit for brevity's sake what is said or invented about the river of Paradise, the sea of stone and of sand, the subterraneous streams, the wonderful fountain, certain herbs, stones, and animals, and the description of the palace."

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[P. 490] *Letter of John Priest to the Governor of Constantinople.*

John Priest by the power and virtue of God and of Our Lord Jesus Christ, Lord of Lords, to A.,<sup>4</sup> Governor of Constantinople.

May he enjoy health and with the grace of God advance to greater things.

It has been made known to Our Majesty that thou esteemest our excellency and that there has been speech among you of our greatness. We have learned from our secretary that thou wishest to send us some curious and amusing things wherewith to delight our justice, etc.<sup>5</sup> What we desire and wish to know is whether thou hast like us the true faith, whether in everything thou believest in Our Lord Jesus Christ. Though we know thee to be a man, and consider thou art but a mortal destined to corruption, thy little people take thee for their sovereign. If thou hast any need of anything that would be agreeable to thee, tell us so through our secretary by a letter from thy charity, and thou wilt get it, etc. If thou wishest to come to our domination, we shall appoint thee the

<sup>1</sup> Yule in *Encycl. Britann.*, 9th ed., XIX (1885), p. 715.

<sup>2</sup> "Interpres vel descriptor."—*Assemani*.

<sup>3</sup> "A.D. 1145."—*Assemani*.

<sup>4</sup> "Perhaps Alexis Comnenus, who died in 1118."—*Assemani*.

<sup>5</sup> These "etc." are from Assemani, and show where he omits parts of the text.

greatest and most worthy of our house, and thou mayest partake of our abundance and of the things that are found among us in plenty; and, if thou wishest to return, thou shalt set forth enriched with our gifts.

If thou wishest to know the greatness and excellence of our altitude, and in which countries our power rules, understand and believe without doubting that I am Priest John, the servant of God, and that I surpass in all riches under the sun and in valour and power all the Kings of the earth. Seventy Kings are tributary to us. I am a devout Christian, and everywhere we protect and support with our alms the poor Christians who are within the empire of our clemency. [P. 491]

We wish to visit the sepulchre of Our Lord with a great army, as becomes the glory of our majesty, and we wish to humble and conquer the enemies of the Cross of Christ and exalt His holy name.<sup>1</sup>

Our magnificence dominates the three Indies<sup>2</sup>; our dominions, beginning from Further India, where the body of St. Thomas the Apostle reposes, advance across the desert to where the sun is born, and return to deserted Babylon, near the tower of Babel.

Seventy-two provinces,<sup>3</sup> a few of which<sup>4</sup> are Christian, serve us; each has its King, and all are tributary to us. In our country are born and found elephants, dromedaries, camels, etc., etc., and animals of nearly every species under the sky. Milk and honey flow in our country. In another country beyond, no poisons hurt, etc. One of our provinces inhabited by pagans, is traversed by a river called the Indus. Issuing from Paradise,<sup>5</sup> it winds its way by divers courses through the whole of that province, and in them are found natural stones, smaragds, sapphires, etc.<sup>6</sup> In another province of ours

<sup>1</sup> "A similar vow was exacted by Haiton, the Christian King of Armenia, from Mongo Cham, the fourth Emperor of the Tartars in 1253. *Histoire Orientale, ou des Tartares, par Haiton, parent du Roi d'Arménie*. Bergeron, *Collect. de Voyages*, Vol. II)." — Note by Layard, *op. cit.*, p. 251.

<sup>2</sup> Medieval writers and travellers commonly divide India into three parts, the application of which is very divergent and confusing. Cf. Yule's *Cathay and Marco Polo*, s.v. India.

<sup>3</sup> Huc has 'sixty-two provinces.' Yule's article in *Encycl. Britann.*, XIX (1885), p. 715, speaks of 72 kings tributary to Prester John. Layard has '72 provinces,' as have our notes from Assemani. (?) The passage quoted above from Razzius about St. Clara mentions sixty 'Christian' provinces. "The number 72 is a prominent one," says Mgr. Medlycott (*Cath. Encycl.*, XIV, 680b) in connection with the number of houses built by Thomas Cananeo at Cranganore, Malabar; but his translation of the charter of Thomas Cananeo (from a British Museum MS. of which I have a copy) shows correctly only 62.

<sup>4</sup> 'Quarum paucae' might also mean 'few of which.'

<sup>5</sup> 'The Indus issuing from Paradise' must be compared with the 'Phison, issuing from Paradise' of which we heard from Mar John III.

<sup>6</sup> Since John de Marignolli (c. 1349) must have picked up in India

all the pepper grows, etc. It is a wooded country, like a forest and everywhere full of serpents, etc.<sup>1</sup> This wood is situated at the foot of Mount Olympus, whence springs a limpid fountain, whose waters preserve all kinds of savours, etc.<sup>2</sup> There

all his strange notions on Ceylon, regarded as Paradise, it seems evident that the Indus (the Phisôn) is made to issue here from Ceylon: for de' Marignôlli also says: "Paradise is a place that (really) exists upon the earth surrounded by the ocean sea, in the regions of the Orient on the other side of Columbine India [Quilon], and over against the mountain of Seyllan [Ceylon]." Here grow all the trees that produce the best of fruits: "wondrous fair are they to look upon, fragrant and delicious for the food of man. Now that fountain cometh down from the mount and falleth into a lake, which is called by the philosophers Euphirattes [Euphrates]. Here it passes under another water which is turbid, and issues forth on the other side, where it divides into four rivers which pass through Seyllan; and these be their names." He names the Gyon: the Phison, "and it goes through India, circling all the land of Evilach [this in India, according to Cosmas Indicopleustes (A.D. 545): cf. McCrindle, *Ancient India*, p. 165], and is said to go down into Cathay, where by change of name, it is called Caromoran, i.e. Black Water . . . I believe it to be the biggest river of fresh water in the world, and I have crossed it myself." Next, he mentions the Tigris and the Euphrates. Cf. Yule's *Cathay*, II, 346-351. These strange geographical notions are much older than de' Marignolli: he must have noted them down in the East from the Nestorian Christians; even the idea that the Phisôn reappeared in Cathay (after subterranean wanderings?) may have been current in China among the Christians. The Hindus too make their sacred Ganges issue at all kinds of places to sanctify the waters of their favourite bathing-places.

<sup>1</sup> Malabar was the pepper country *par excellence*. The passage above must be compared with what Friar Odoric of Pordenone writes about the pepper forest and its serpents (about 1321). "And now that ye may know how pepper is got, let me tell you that it groweth in a certain empire whereunto I came to land, the name whereof is Menibar [Malabar], and it groweth nowhere else in the world but here. And the forest in which the pepper groweth extendeth for a good eighteen days' journey, and in that forest there be two great cities, the one whereof is called Flandrina [Fandaraina, Pandarani] and the other Cyngilin [Seigla, i.e. Cranganore]. . . . And in this forest also there be rivers in which be many crocodiles, i.e. serpents. [And there be many other kinds of serpents in the forest which the men burn by kindling tow and straw, and so they are enabled to go safely to gather pepper.] . . . At the extremity of that forest, towards the south, there is a certain city which is called Polumbum" [Columbum, Quilon]. Cf. Yule's *Cathay*, I (1886), pp. 74-77. The passage in square brackets is from the Palatine MS. (Cf. *ibid.*, I, 41).

Marignolli (A.D. 1347-48) has a mild sneer probably at Odoric's talk about the pepper forest. "And there is no roasting of the pepper, as authors have falsely asserted, nor does it grow in forests, but in regular gardens." Cf. Yule, *Cathay*, II. 343. Apparently, says Yule (I, 77n. 2), Odoric did not stay any time in Malabar, and he probably derived his information from harbour gossip. Be that as it may, it is certainly remarkable that some of the same reflections occur here in Prester John's letter.

Is not the pepper forest and its serpents referred to by much older writers, which would show a remarkable fixity in the popular talk picked up in Malabar?

<sup>2</sup> The limpid fountain at the foot of Mt. Olympus would seem to

is a sandy sea without water, etc.<sup>1</sup> Three days from that sea there are certain mountains, whence flows a river of stones, etc. Near the mountains there is, among uninhabitable mountains, a desert; underground flows a stream to which there is no approach, etc. The stream flows into another great river, which the people of our country enter and whence they extract very great quantities of precious stones, etc. Beyond the river are ten Jewish tribes, which, although they choose their own Kings, are the slaves and tributaries of our excellency.<sup>2</sup>

In another province of ours, near the torrid zone, there are worms, called in our language salamanders; these worms can live only in the fire; like other worms which produce silk they make around their body a kind of skin, which the ladies of our palace weave with care, and so we have stuffs and garments for all our excellency's needs. These clothes are washed only in a strong fire.<sup>3</sup>

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be the fountain of Paradise (Ceylon), in which case Mt. Olympus would be Adam's Peak: but neither in M<sup>r</sup>. Crindle's *Ancient India*, nor in Yule's *Cathay* and *Marco Polo*, do I find Adam's Peak called so. And one would not expect the pepper forest to be placed in Ceylon.

Pliny says that the pepper-plant grows everywhere in India, though some writers assert that it grows only on the slopes of Caucasus, which lie exposed to the sun. Cf. M<sup>r</sup>. Crindle, *Ancient India*, p. 121. To the ancients the Caucasus was the Himālaya. I do not find, however, any ancient authors identifying the Caucasus with Mt. Olympus.

Philostratos of Lemnos (born circa 172 A.D.) in his biography of Apollonius of Tyana says something similar: that on the heights of Mt. Kaukasos grew various kinds of aromatic plants, and the cinnamon-tree and in the hollows the pepper-plant and frankincense-bearing trees. (*Ibid.*, p. 193.) But M<sup>r</sup>. Crindle doubts whether Apollonius and his journalist Damis, an Assyrian, really visited India or merely copied from pre-existing materials (p. 195).

<sup>1</sup> Friar Odoric (ante 1330) places 'the Sea of Sand' at a day's journey from Iest (Yezd) in Persia. Cf. Yule's *Cathay*, I (1866), p. 52.

<sup>2</sup> "In Marco Polo's Travels (lib. II, c. 2), Jews are described as being in the army of the Emperor Cublai. It seems, therefore, that it was not in this century alone that the lost tribes were traced to Tatarry." Note by Layard, *op. cit.*, I, 252.

A number of early European writers in India thought they discovered the lost Jewish tribes in Afghanistan. Fr. Anthony Monserrate, S.J., (1580-82), seriously thought he had discovered them in Kashmir.

<sup>3</sup> "The salamander is also described by Marco Polo (lib. I, ch. 47). The cloth is mentioned in the inscription on the celebrated [Christian] stone of Se-gan-foo (d'Herbelot, Vol. IV, p. 380). This fable, or exaggeration, which was probably of very early date, appears to have been current among the Tatars or among the Chaldeans." Layard, *op. cit.*, I, p. 252.

"The story," says Yule, in his *Marco Polo*, 2nd ed., London, 1875, I, 217-218, "is as old as Aristotle." "In Persian the creature is called *Samander*, *Samandal*, etc., and some derive it from *Sam*, 'fire' and *Andar*, 'within.' Doubtless it is a corruption of the Greek *σαλαμάνδρα*, whatever be the origin of that." Marco Polo (*id.*, I, 215) writes of the province of Chingitalas: "And you must know that in the same mountain there is a vein of the substance from which Salamander is made.

We believe that we have no equal, either for the quantity of our riches or the number of our subjects. When we issue forth to make war upon our enemies, we cause to be carried before our face, each on a car, thirteen great precious crosses made of gold and precious stones.<sup>1</sup> Each cross is followed by ten thousand horsemen and a hundred thousand armed foot soldiers, without counting those who are in charge of the carts conveying the baggage and provisions of the army. [P. 492]. When we go out merely on horseback, our majesty is preceded by another cross without either gold or precious stones or picture,<sup>2</sup> in order that we may always remember the Passion of Our Lord Jesus Christ; and there is also a golden vessel full of earth, in order to remind us that our body will return to its native origin, that is the earth; and another vessel, of silver, and filled with gold, is carried before us, that all may understand that we are Lord of Lords. Our magnificence surpasses all the riches in the world, etc.

Every year we visit the body of the prophet St. Daniel in deserted Babylon,<sup>3</sup> and all are armed on account of the

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For the real truth is that the Salamander is no beast, as they allege in our part of the world, but is a substance found in the earth." Think of asbestos. "I cannot tell, says Yule, when the fable arose that asbestos was a substance derived from the animal."

When Friar James, one of the martyrs of Thana (Salsette near Bombay), was cast into the fire and would not burn, the Cadi cried out: "He is no saint! he is no saint! But the reason why he is not burnt is that he hath on his back a garment from the land of Abraham. Wherefore let him be stript naked and so cast into the fire!" Cf. Yule's *Cathay*, I (1866), p. 64.

<sup>1</sup> "The army of Naïam, when he rebelled against Cublai, was preceded by a cross. (Marco Polo, lib. II, ch. 6.)" Layard, *op. cit.*, I, p. 252.

<sup>2</sup> By picture is probably meant a representation or painting of the crucified Saviour. The Nestorians of China, as we know, would not tolerate crucifixes, and the Emperors of China showed themselves astonished when the medieval Franciscans exhibited crucifixes before them.

<sup>3</sup> "According to tradition, the tomb of Daniel was preserved amongst the ruins of Susa, or in the valley of the Bakhtiyari mountains. We have no other mention of its existence at Babylon." Layard, *op. cit.*, I, p. 253.

"During the Middle Ages there was a widespread and persistent tradition that Daniel was buried at Susa, the modern Shuster, in the Persian province of Khuzistan. In the account of his visit to Susa in A. D. 1165, Rabbi Benjamin of Tudela narrates that Daniel's tomb was shown him in the façade of one of the synagogues of that city; and it is shown there to the present day. The Roman Martyrology assigns Daniel's feast as a holy prophet to 21 July, and apparently treats Babylon as his burial-place." *Cath. Encycl.*, IV. 621c.

Assemani. (*Bibl. Orientalis*, Vol. IV, p. DCCLXXXI) says of Susa: "Ibi corpus Danielis Prophetæ jacere affirmant Abulpheda (*Tab. geogr.* num. 296), Jesuabius Nisibenus (Tom. 3, p. 306), et Gregorius Abulpharagius (*Histor. Dynast.*, p. 54)."

tigers (?)<sup>1</sup> and the serpents which are called 'denteses' (?).<sup>2</sup> In our country is caught the fish whose blood is used for the purple dye. We have many castles (*munitiones*) and very strong and difform tribes. We rule over the Amazons<sup>3</sup> and also over the Brahmans. The palace in which our sublimity resides is like that built by St. Thomas for Gondoforus, King of the Indians;<sup>4</sup> its workshops and the rest of the structure is like it entirely; the ceilings, beams, and epistyles (*epistylia*) are of sethym wood; the roof of the same palace is of ebony, to prevent its being consumed by fire. At the extremities, on the summit of the palace, there are two golden apples with, in each of them, two carbuncles, so that the gold should shine by day and the carbuncles by night.<sup>5</sup> The chief gates of the palace are of sardonix mixed with the horn of the cerastes,<sup>6</sup>

<sup>1</sup> The word in the Latin text is 'tiros,' which I cannot find in the best dictionaries at my disposal.

<sup>2</sup> The word 'denteses' does not occur in my Latin dictionaries. Both Layard and Huc omit translating parts of the text, this one included.

<sup>3</sup> Probably many places in India, understood in the vaguest sense, had Amazons or legends about them. There were bodies of fighting women at several South Indian courts, as among the later Moghul Emperors of India. In 1581, on the Afghanistan side of the Khaibar Pass, Father Anthony Monserrate, S.J., was told stories of Indian Amazons in connection with Landi Khāna (Landi Kotal). Cf. Monserrate in *Memoirs As. Soc. Bengal*, Vol. 3, No. 9, p. 614.

Jehan de Mandeville, whose book of travels was published between 1357 and 1371, says he travelled great part of Ethiopia, Chaldaea, Amazonia, India the less, the greater, and the middle, and many countries about India. Note the three divisions of India. Cf. *Encycl. Britann.*, 9th ed., XV (1883), p. 473. The article on Amazons in the *Encyclopedia Britannica* speaks only of Amazons outside India proper.

<sup>4</sup> A curious reminiscence of the stories in the *Acta S. Thomae*, which shows what vogue it had both in the West and in the East. The whole of Prester John's letter is by some considered a Nestorian forgery. To us it seems that what may have sounded exaggerated in Europe, for instance the administration of Prester John's court, is well in keeping with what we read of court life in China or of the Moghuls in India. However, the secretary who penned the letter succeeded in astonishing Europe by pilfering from a number of books on Eastern wonders.

<sup>5</sup> Cosmas Indicopleustes (A.D. 535) speaks of one of the two kings of Ceylon, as possessing the hyacinth. "In this island they have many temples, and in one situated on an eminence is a single hyacinth as big as a large pine-cone, the colour of fire, and flashing from a distance, especially when the sunbeams play around it—a matchless sight. Cf. J. W. McCrindle, *Ancient India*, Westminster, 1901, p. 160. "The Chinese pilgrim, Hiouen Thsiang, who was a century later than Cosmas, relates that at Anurajapura, on a spire surmounting one of its temples, a ruby was elevated, which with its transcendent lustre illuminated the whole heaven." (*Ibid.*, p. 160, n. 8.) Marco Polo speaks of a ruby, the biggest and finest in the world, possessed by the king of Ceylon: so does Hayton, his contemporary; Friar Odoric, Ibn Batuta, Friar Jordanus, Andrea Corsali (1515) and a Chinese work are still quoted in this connection for Ceylon by Yule (*Marco Polo*, II (1875), 297-298).

<sup>6</sup> The Egyptian horned viper.

lest any one should enter stealthily with poison;<sup>1</sup> the rest are of ebony. The windows are of crystal. The tables at which our court eats are some of gold, others of amethyst, and the columns which sustain them are of ivory. Before our palace there is a square where our justice alone is wont to watch those who fight in duel, etc.<sup>2</sup>

The room where our sublimity sleeps is a wonderful piece of art, adorned with gold, silver and every kind of precious stones, etc. Within it, balsam is ever burning. Our bed is of sapphire. We have most beautiful women; *sed non accedunt ad nos, nisi causa procreandorum filiorum quater in anno, et sic a nobis sanctificatæ, ut Bethsabée a David, redeunt quæque in locum suum.*

Our court eats once a day. At our table feed thirty thousand men, not counting those who go in and out; and all these receive daily sums from our chamber, for their horses and other expenses, etc. Every month we are served at our table by seven Kings, each in his turn, by seventy-five dukes, and by three hundred and sixty-five counts, in addition to those who are appointed for divers functions. At our court there dine daily by our side, on our right twelve Archbishops, on our left twenty Bishops, besides the Patriarch of St. Thomas, and the Protopapas of Salmagantum, and the Archprotopapas of Susae, in which city is the throne and seat of our glory and our imperial palace. Every month, each of these [P. 493] in turn never departs from our side. Abbots, according to the number of the days of the year, serve us in our chapel and return home every month, as many others returning every month for the same ministrations in our chapel.

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<sup>1</sup> Cups made of rhinoceros horn were commonly believed to be proof against poison. "Now this Abath [Rhinoceros] is a beast which hath one horne only in her forehead, and is thought to be the female Unicorne, and is highly esteemed of all the Moores in those parts as a most soveraigne remedie against poyson." Barker in Hakluyt, II, 591. Quoted by Yule, *Hobson-Jobson*, s.v. Abada. At an Oriental Art Exhibition by the Nahar family (Jainas), 46, Indian Mirror Str., Calcutta, I was shown in January 1922, a collection of cups made of rhinoceros horn.

Claudius Ælianus (middle of 2nd century of our era) writes: "India, according to report, breeds one-horned horses and also one-horned asses. From these horns drinking-cups were made; and if into these one threw a deadly poison, the drinker would come by no harm from such a plot against his life, for the horn both of the horse and of the ass is an antidote against poison." Cf. M'Crindle's *Ancient India*, p. 136. Evidently one of these unicorns is the rhinoceros. At p. 193, n. 1, *ibid.*, M'Crindle says that the story of the unicorn-ass which Pholostates of Lemnos places in the river Hyphasis (Panjab) is copied from Ktésias. From the horn of the unicorn-ass a cup was made which possessed magical virtues.

<sup>2</sup> This seems to be characteristically Eastern. We think of Akbar.

Thy prudence must not wonder that our worthiness lets itself be called by the title of Priest: indeed, we have at our court many servants with dignities, titles and functions pertaining to the ecclesiastical state, and honoured with even higher dignity than we in the divine ministrations. Thus, our butler is a Primate and King; our cupbearer is an Archbishop and King; our chamberlain, a Bishop and King; our mareschal, an Archimandrite and King; our headcook, a King and Abbot. Hence, our highness does not let itself be called by names and orders of which our court is full. And so, out of humility, we choose to be called by a higher title and a lower rank.<sup>1</sup>

Our empire extends on one side a four months' journey; on the other, no one can know how far it reaches. If thou canst count the stars of heaven and the sands of the sea, number also our dominions and reckon our power.

Thus far Prester John. We add Assemani's comments on some features of this rodomontade, worthy of an Eastern potentate.

"It appears from this letter, first, that he wished to visit the Lord's sepulchre with a great army; secondly, that, when he wrote, he had fixed at Susae the seat of his kingdom; thirdly, that he had at his court many Bishops, Archbishops, and Archimandrites; fourthly, that out of humility he used the name of Priest, rejecting the titles of Archbishop, Bishop, and Abbot. As regards the pompous title of Patriarch of St. Thomas, Protopapas of Salmagantum, and Archprotopapas of Susae, he had them from the Nestorians, who assumed these titles in Tartary, China and India; for, as I wrote above, Joseph the Indian (*Josephus Indus*) gives to the Metropolitans of India and Chataja [Cathay] the name of Patriarch;<sup>2</sup> and the priest Adam is called Papas or Papates of the Sinae in the Syro-Chinese inscription; hence, Protopapas means a Bishop, and Archprotopapas means an Archbishop. According to Joseph Scaliger (*de Emendatione Temporum*, Bk. 7, p. 684), nearly the same custom prevailed among the Christians of Ethiopia. 'They call their Bishops by the Greek name of Episcopasath, and their Priests by the name of Papasath, the Greeks still calling nowadays the Patriarch of Alexandria, whom they regard as a supreme Pontiff, by the name of Lika Papasath.' By the Protopapas of Salmagantum understand Salmasa in Media; by the Archprotopapas of Susae, the Prelate of Susae in Elamis, about which see pp. 421, 423, and 424. What we hear about the body of St. Thomas in Further India, about the body of

<sup>1</sup> *Sic.* "Et ideo altitudo nostra non est passa vocari eisdem nominibus, aut ipsis ordinibus insigniri, quibus curia nostra plena esse videatur. Et ideo maiori nomine et inferiore gradu propter humilitatem magis eligit nuncupari."

<sup>2</sup> Compare with what we noted above in connection with Mar John's account (Document 1) and his title of Patriarch.

the Prophet St. Daniel in deserted Babylon, [P. 594] about the palace said to have been built by St. Thomas for Gondophorus, King of the Indians, all this is supported by the common tradition of the Nestorians, as I have shown at pp. 30, 34, 356. Finally, the large number of his wives shows that these Tartar Kings who had embraced Christianity were perhaps Christians in name only. Abulpharagius, as I shall show anon, writes the same of his son John."<sup>1</sup>

The passages of Prester John's letter left unpublished by Assemani are briefly as follows. All the wild beasts and monstrous creatures commemorated in current legend were to be found in Prester John's dominions, as well as all the wild and eccentric races of men of whom strange stories were told, including those unclean nations whom Alexander Magnus walled up among the mountains of the north; and who were to come forth at the latter day.<sup>2</sup> His dominions contained the monstrous ants that dug gold<sup>3</sup>; they produced all manner of precious stones and all the famous aromatics. Within them was found the Fountain of Youth; the pebbles which give light, restore sight, and render the possessor invisible; the Sea of Sand was there, stored with fish of wondrous savour; and the River of Stones was there also; besides a subterraneous stream whose sands were of gems. There were no poor in his domains, no thief or robber, no flatterer or miser, no dissensions, no lies, and no vices. Among the details given of the palace, which was after the plan of the palace built by St. Thomas by Gondophares, we find that before it was a marvelous mirror erected on a many-storied pedestal (described in detail); in this speculum he could discern everything that went on throughout his dominions, and detect conspiracies. There was another palace of still more wonderful character, built by

<sup>1</sup> Assemani explains 'Prete Joanni' as Persian for 'Prestegiani' i.e. Apostolical. If that is correct, the name would not have been a bad one for a King of the St. Thomas Christians in Malabar. But did King Baliartes of the St. Thomas Christians ever use that title?

<sup>2</sup> The rampart of Gog and Magog (or the Great Wall of China) was believed to have been erected by Alexander the Great to shut up the fierce nations of the north and bar their irruptions into civilized foreign lands. Cf. Yule, *Cathay*, I (1866), p. 490 n. 1, and see, at the end of Vol. I, his reduction of the Calulan map (1375), N. E. corner. Alexander's doings in China and his founding the city of Khubdan (Khumdan, or Chhanggan, i.e. Singanfu in Shensi) can be read in Theophylactus Simocatta, a Byzantine writer of the early part of the 7th century. See Yule's *Cathay*, I (1866), pp. 1-11.

<sup>3</sup> The gold-digging ants are an old story already found in Strabo, Pliny, Ælian, Dion Chrysostom, and Pseudo-Kallisthenes. Cf. McCrindle *Ancient India* (Index), and see pp. 44-45, n. 3, for an explanation of the myth, and p. 51, n. 1, for a fuller list of the authors who have noticed the gold-digging ants. There we find still Herod., Arrian, Clem. Alex., Tzetz., Propert., Pomp. Mela, Isidor., Albert. Mag., etc., etc.

the presbyter's father in obedience to a heavenly command, in the city of Bribric.<sup>1</sup>

Yule thinks that Pope Alexander III.'s letter of 1177 was written to the Negus of Ethiopia and that it alluded to the vaunting epistle we have quoted, when it told Prester John that, the less he boasted of his wealth and power, the more readily would he (the Pope) comply with his wishes about a Church at Rome, altars in Sts. Peter and Paul, and in the Church of our Lord's Sepulchre at Jerusalem.<sup>2</sup>

But enough of that phantom being, Prester John. Let us return for a while to Mar John III.

It will be remembered that the hymn quoted in the beginning of this chapter records also (stanza 4) the conversion of three kings by St. Thomas. Here too the hymn may have been inspired by Mar John III. Stanza 4 would embody Malabar traditions. Bishop Roz of Cranganor, writing in 1605, mentions the conversion by St. Thomas of three kings (other than the Magi?) and of three emperors.<sup>3</sup> The three emperors were those of Bisnaga, Malabar, and Pande.

These three kings are mentioned already in 1561, when the inscription on the stone cross of (Great) St. Thomas Mount was fraudulently deciphered by a Brahman, who evidently had tutored himself previously in the doctrines and traditions of the St. Thomas Christians. He said he read among other things: "A king of three crowns, Cheralacone, Indalacone, Cuspanadiad and King Alexander of the kingdom of Ertinabarad, with his daughter Catherina, and many other virgins, and six kinds of castes, embraced of their own accord the law of Thomas, it being the law of truth; and he gave them the Holy Cross to adore."<sup>4</sup>

To interpret this passage we have fortunately the 'Malavar' text and a Spanish translation, both in a letter of Father Anthony Monserrate, S.J. (Cochin, 1579). The two differ probably not a little from each other; at any rate, the Spanish

<sup>1</sup> Cf. *Encycl. Britann.*, XIX (1885), p. 715, col. 1, Yule's summary of the letter. Yule (*ibid.*) identifies doubtfully Salmagantum with Sarmagantum, Samarkand. Bribric I cannot trace.

<sup>2</sup> *Ibid.*, XIX (1885), pp. 715-716. Could Prester John's letter, if written in 1165, as Yule thinks, have remained so long unanswered? Prester John's letter in Assemani says nothing about such wishes.

<sup>3</sup> Cf. our Pt. I, Ch. II.

<sup>4</sup> Cf. Diogo do Couto, *Da Asia*, Decada VII, Bk X, Ch. V, p. 478 (Lisboa, 1783) and P. F. Vincenzo Maria di S. Catharina da Siena, *Il Viaggio dell' Indie Orientali*, Roma, 1622, Bk. 2, Ch. 2, p. 137. Other authors mention Coromandel or Bisnaga, Malabar, and Pande (i.e. Madura).

Since Cheralacone should represent the country of the Keras or Cheras, i.e. Malabar, Indalacone should represent Coromandel; Cuspanadiad should then stand for the country of the Pandiyans or Madura. But Hendu was Malabar. The proper names are, therefore, written corruptly, as will appear presently.





text differs notably from the Portuguese text of do Couto which we have just translated. Some flaws in the 'Malavar' text of the MS., of which I have lying before me a photographic reproduction, and my ignorance of 'Malavar,' make it imperative to reproduce the photograph. May I ask lovers of old Tamil to endeavour to restore the 'Malavar' text and to give of it as literal a translation as possible?

The 'Malavar' text, romanized by Monserrate, runs thus.

"Arrij..jigartan<sup>1</sup> ayyarru taninel terriya tannuul tirunda muueyil paráparamaguia param parul<sup>2</sup> onde taratara Caliyata candianguil juda culata tuyacarra munenta<sup>3</sup> vadel perutum vagueiadio uagueye Cannia Maria Carupamadaqui manniya muppadum varija Mariatil onde enum oruporul tanne cundana pandira<sup>4</sup> de siuarca vrepár/Arru Jameyata aruntauenurreyum curriya maileca orumuni tondi tachu colam<sup>5</sup> tambagata ruuum/nechinacoyil Iracune chametan sri puanatil cherila conum Curagula Choleum curuguil pandiyen atandar/puratil arichandemom<sup>6</sup> catuennum cannierecaresum maltum palapalam marcatarum chitam relinta telinta/chintauerai tame perunti tauamumon Thoma culatil toludari panintar.

"Antoni modor arriuorumide vantuorujogam marraeyau-en chedal<sup>7</sup> candu chameta vdata curusil tondar culatil tolum/ariyargal vinnau pauua perum carel ningui Irreyauenechenta anguu<sup>8</sup>/iripadu t. nam."<sup>9</sup>

*"The explanation of these letters in Spanish simply, which is this:*

"After the law of the Christians appeared in the world, 30 years thence, on the 21st of the month of December, the Apostle St. Thomas died at Mailapar (which is a place where the city of S. Thome is now); there was knowledge of God, One, Sole, which was change of the law and destruction of the demon; and there was destruction and desertion of the Jews, never again to have mercy on them, for He abandoned them thus. God was born of the Virgin Mary; he was under her obedience 30 years, and He was a God without end. He taught twelve Apostles, this God of all the six laws, i.e. of all the nations. The disciple of this God came to Maylapar with a carpenter's rule and a beam to make a Church and King's house. The Cheramperemal, who is King of Malauar, Cholia-peremal, who is King of Charamandel, Bisnaga, and Pandien.

<sup>1</sup> Two or three letters not deciphered; . . . jigartan might be jeyartan.

<sup>2</sup> Xarul (?).

<sup>3</sup> Muninta (?).

<sup>4</sup> Pandiru (?).

<sup>5</sup> Colum (?).

<sup>6</sup> Arichandemim (?).

<sup>7</sup> Chetal (?).

<sup>8</sup> Perhaps one or two letters more, not on the photograph, at the end of the line.

<sup>9</sup> One or two vowels could come after t, of which the first must be an i or a u.

who is King of Pandi, Cape of Comurin, and King Arichen-dram of Atanapuram, and another Catri King, king of the vir-gins (*e otro rey Catri rey de las virgines*), and many others of different nations and sects determined all with pleasure and, of their free will agreeing among themselves, submitted to the law and service of St. Thomas, a holy penitent man<sup>1</sup> The time came when St. Thomas died at the hand of the Bramene, and a cross of blood was made (*hizose*). All those who adore this cross, God King pardons them the great sin of their birth (*su gran peccado del nascimiento*), and coming there (i.e., where God is) they will live (*an de uiuir*). Truth."

Is it possible that the number 'three' of the kings in the above passage should have been influenced by the belief that the kings converted by St. Thomas were the three *Magi*?

"A homily, the author of which is unknown, but which is attributed to St. John Chrysostom, says that St. Thomas baptised the three Magi, who worshipped the Infant Jesus at Bethlehem and helped him later in his apostolate. Sophro-nius says the same thing."<sup>2</sup>

"It is said that, after their return home, the Magi were baptized by St. Thomas and wrought much for the spread of the Faith in Christ. The story is traceable to an Arian writer of not earlier than the sixth century, whose work is printed, as *opus imperfectum in Matthaeum*, among the writings of St. John Chrysostom. (*P.G.* LVI, 644). This author admits that he is drawing upon the apocryphal Book of Seth, and writes much about the Magi that is clearly legendary. The Cathedral of Cologne contains what are claimed to be the remains of the Magi; these, it is said, were discovered in Persia, brought to Constantinople by St. Helena, transferred to Milan in the fifth century and to Cologne in 1133 (*Acta SS.*, I. 323)."<sup>3</sup>

<sup>1</sup> I am responsible for the punctuation in this paragraph. The explanations introduced by 'i.e.,' are evidently Monserrate's. Cheram-peramal is the Xaram Perumal of other Portuguese authors, or the King of Malabar whom St. Thomas is said to have converted; the Choliapere-mal is the Perumal or 'Great Man' of the Chola or Coromandel Coast; King Arichendram of Atanapuram is evidently a reminiscence of Haris-chandra, of Hastināpura, a city, the ruins of which are situated on the banks of an old bed of the Ganges, 57 miles N.E. of Delhi. Was the other Ksatriya King (one of the warrior caste) King of the Amazons, like Prester John?

Most versions of the Brahman's translation make St. Thomas come to Mylapore with a staff; but some speak of a carpenter's rule. Here we have both. The Brahman had evidently learned from the Christians the story of St. Thomas' building a palace for a king at Mylapore; but that story shows once more how the St. Thomas Chris-tians placed Gondophares' palace at Mylapore.

<sup>2</sup> Cf. Mgr. Zaleski, *Les origines du Christianisme aux Indes*, p. 158.

<sup>3</sup> W. Drum in *Cath. Encycl.*, I, 530b. Prester John too was

Father Bernard of St. Thomas, T.O.C.D., tells me that the St. Thomas Christians have no traditions or documentary evidence about Gaspar, the Perumal of Jaffna, one of the Magi baptised at Quilon by St. Thomas, on whom see Maffei in our Part I, Chapter II.<sup>1</sup>

If that were so, should we not say that the Malabar Christians have simply placed in Southern India the kings who, according to the *Acta*, were converted by St. Thomas? These would be Gondophares and his brother Gad, or the King of Helioforum, a place to be identified perhaps after all with Meliaporam (Mylapore);<sup>2</sup> the King of Sandaruk, identified by

descended from the three Magi. Cf. *Cath. Encycl.*, XIV, 400; and *Encycl. Britann.*, XIX (1885), 715, 717, col. 2.

<sup>1</sup> de Barros (*da Asia*, Dec. 3, Bk. 7, ch. 11, pp. 236-237, Lisbon edn., 1777) had the following from a Malabar Christian who had gone to Portugal in the reign of D. João, in order to learn Latin: "This Christian also related to us that, at the house of Coulam [Quilon], which had been made by the Apostle St. Thomas' other disciple, there was the tomb of the Sibyl, called the Indian Sibyl, and that this Church had been her oratory. And that, at her warning, through her announcing the Birth of Christ Jesus, a King of the Island of Ceilam, called Perimal, had gone on a trip to the Coast of Mascate to join the two Kings who went to adore the Lord of Bethlehem; and he was the third, and, at the request of this Sibyl, he had brought her the Image of Our Lady painted on a retable, which had been placed in her own tomb. About the journey of these Kings and where the two lived in whose company he went [p. 237] we write in our *Geography*, when we speak of the cities of Nazua and Balla, which are at the back of the ridge of mountains running along the coast of Mascate, which Province the Moors call Yman."

On the Magi, an inexhaustible subject, see Yule's notes in *Marco Polo*, I (1875), pp. 79-84; *Cathay*, I (1866), 50, 51. Why should some writers have made the Ceylon King come from Jaffna? Because his title of Perumal is Tamil rather than Sinhalese? Sometimes Mylapore is spoken of as being in the Island of Seilam. (Cf. the Nestorian Bishops' letter of 1504 in Medlycott, *India and the Apostle Thomas*, p. 971.) Evidently the Chola country is meant, and it is in the Chola country, at Mylapore, that the St. Thomas Christians would place Gondophares' court. Might Gondopharus have led to Gaspar? I find that some (Syriac?) writers call one of the 3 Magi by the names of Gudphorbis (Gondophares?). Cf. Yule's *Marco Polo*, I (1875), p. 84. Various authors bring the Magi from Babylon, Shusham, Hormuz, Ceylon; Armenian tradition brings them from Lake Van; Haiton the Armenian from Chinese Tartary; John de' Marignolli from the Indian Archipelago (I cannot find the passage in Yule's extracts from de' Marignolli in his *Cathay*). Marco Polo makes them come from Sava in Persia; Friar Jordanus from Mogan, towards Baku, on the Caspian Sea (Cf. Yule's *Friar Jordanus*, p. 53); Friar Odoric places them as Cassan (Kashan), but some of the MSS. of his travels speak of them in connection with Saba (Persia). Cf. Yule's *Cathay*, I (1866), p. 51. Is Shusham (*supra*) equal to Chosha, Chola, Coromandel?

<sup>2</sup> The Hierapolis of Orderic Vitalis (12th century) brings us perhaps closer to Mayilapur. See Germann, *Die Kirche der Thomaschristen*, p. 16, n. 2.

"The town of Gondophares has no name given to it except in the *Passio*, the manuscripts of which call it Eliforum, Yroforum, Hienforum. Inform, Hierapolis." Sylvain Lévi in *Indian Antiquary* 1904, p. 12, n. 1.

Mr. Burkitt (*Indian Antiquary*, 1903, p. 160) says that the British

the St. Thomas Christians with Cranganore or its immediate vicinity, and some other king of Southern India, since they do not now mention Mazdai by name.

Our Uniate friends of Malabar insist on the orthodoxy of Mar John of India. "At the Court of John Comnenus<sup>1</sup> he found the envoys whom Calixtus II. had sent to promote the union of the Greek and Roman Churches. The Archbishop went with them to Rome, received the *pallium*, and exposed before the Pope and the Cardinals the miracles that were wrought at the tomb of St. Thomas in Mylapore.<sup>2</sup> These facts

Museum Syriac MS. of the *Acta* (Add. 14645), used by Wright and written A.D. 936 (cf. *ibid.*, p. 2), calls Gundaphar 'King of Hindu,' and thus where Wright wrote: "And when Judas [Thomas] had entered into the realm of India with the merchant Habbān, Habbān went to salute Gūdnaphar, the King of India," (*ibid.*, p. 4), we must read instead of 'the realm of India' literally 'Hindu city.' This appears to me an important point in favour of the Syrian traditions of Malabar, which, during the last 400 years that I can trace them, never speak of St. Thomas' mission in the north of India. Is it not a fact that the Syrians and the Arabs, from the earliest time, designated India as a whole by the dual name Sind and Hind, Sind denoting N. India, while Hind applied to S. India? Why then does the British MS not speak of Gondophares as King of Sind, if not because it refers to S. India? 'Hindu city' would mean a city of 'Hindu,' a name still used by the Syriac Bishops for their title as Bishops of Malabar, or Southern India. There were so many important cities on the Malabar and Coromandel Coasts that it should be possible to satisfy with them the requirements of the *Acta*, even if we have to give up the Gondophares of the coins and inscriptions. At Mylapore I have found, near the Church of St. Thomas' traditional tomb, two medallions on the same stone, one representing a Persian King, the other a Persian Prince. The medallions are undated and uninscribed. They reopen the whole question of the tradition of the St. Thomas' Christians, which places Kandāpa Rājā (Gondophares?) at Mylapore and his palace in the sea.

On Hind and Sind see Yule's *Hobson-Jobson*, s.v. India and Sind. "I believe," he writes in *Cathay*, II (1886), p. 183 n., "the India Minor, India Major, and India Tertia of Jordanus will be found to answer pretty closely to the Sind, Hind, and Zinj of the Arabs, and that these names are the origin of the three Indias." "The earlier Mahomedans hardly regarded Sind as part of India, but distinguished sharply between *Sind* and *Hind*, and denoted the whole region that we call India by the copula 'Hind and Sind.'" Yule, *Hobson-Jobson*, s.v. Sind.

"Alexander Metropolitā da Koll Hendo" is translated by Friar Paolino a S. Bartholomaeo (*India Orientalis Christiana*, Romae, 1794, p. 263) by "Totius Malabariae Metropolitā Alexander." (A.D. 1674, March 3.) However, at p. 88 *ibid.*, he translates "Alexander Metropolitā dekul Hendo" by "Alexander Metropolitā of all India." The Syrian Bishops in Malabar also called themselves the Gate of All-India, 'Taraā indu coll Hendo' (*ibid.*, pp. 88, 95, and referring to Raulin, p. 447).

<sup>1</sup> If this name occurs in the records of John III.'s journeys, it should fix the date of his visit to Rome, about which we have noticed so much wavering in the different accounts. But the reader will have concluded by now that the name does not occur. Alexius I. (Comnenus) reigned from 1081 to 1118; John II. (Comnenus) from 1118 to 1143; Manuel I (Comnenus) from 1143 to 1180; Alexius I. (Comnenus) from 1180 to 1183.

<sup>2</sup> The name of Mylapore does not occur in the records, though by

are well authenticated, and cannot be denied. If the Indian Church was at the time Nestorian, the Archbishop should have gone to the Catholicos of Seleucia or to the Metropolitan of Persia, his immediate superior. The very fact that the Archbishop went to Constantinople and to distant Rome, points to the fact that he professed the Catholic Religion, and consequently the Indian Church of which he was Archbishop or Patriarch was also Catholic."<sup>1</sup>

The argument is more dogmatic than conclusive. While the veracity of the man and the place he came from remain so difficult to settle, his orthodoxy is a point that cannot be decided. They would not believe him in Rome until he swore on the Holy Gospels that he did not tell lies. And we can hardly imagine that they believed much in him even after that.

In the reign of the Nestorian Patriarch Yaballâhâ III. (1281-1317), the good people of Rome were badly taken in by Rabban Saumâ, a monk, who had come to Bagdad from China with Mark (later Yaballâhâ III), in the time of Patriarch Denha I. (1265-1281). In fact, Rabban Saumâ was born at Khânbâliq (Pekin). Argon Khân, the Prince of the Mongols, asking Yaballâhâ for a Christian ambassador to the Emperor, to the Pope, and the Western Princes, Rabban Saumâ was chosen and sent off with plenty of money, three horses and a suite.

As the adventures of our Mar John III. may have run on lines very much similar to those of Rabban Saumâ, we draw upon Father A. Fortescue for an interesting summary of the story.<sup>2</sup>

"Rabban Saumâ's embassy in Europe is one of the most curious episodes of later Nestorian history. By this time, the very existence of a Nestorian Church was almost forgotten in the West. Perhaps the most remarkable point in his adventures is the unquestioning confidence with which everyone takes his word that he is a good Christian, as they are. So entirely had suspicion of Nestorians died out, that even the Pope gave him Communion. Rabban Saumâ came to Constantinople, saw what he calls 'King Pasileus' (evidently taking that for his name), the Holy Wisdom, all the relics and wonders. Then he comes to Italy, lands at Naples, and sees King 'Irid Harladu.'<sup>3</sup> At that time Irid Harladu was fighting the King of Arkun (Aragon). Honest Saumâ is amazed that in European war only combatants are killed. Not so in war

Ulna (or Ultima) might be meant Melia, Maila, Mayila, Meilan, i.e., Mayilapur. Or should we read Calamina?

<sup>1</sup> Cf. the Rev. J. C. Panjikaren, *The Syrian Church in Malabar*, p. 33.

<sup>2</sup> Father A. Fortescue does not relate the story of our Mar John III.

<sup>3</sup> "This astonishing name is simply 'il re Carle due' (Chabot, *Histoire de Mar Jab-Alaha, Patriarche, et de Raban Sauma*, Paris, ed. 2, 1895, p. 60." Note by A. Fortescue.

waged in his country. Arrived at Rome, he finds the Pope just dead.<sup>1</sup> Instead of a Pope he finds twelve great Lords, called 'Kardinäle.' He says he has come from King Argon and the Katholikos of the East. The Cardinals ask him who founded his Church (clearly they have never heard of it), and he says: 'Mâr Thomas, Mâr Addai, Mâr Maris; we have their rite.' They ask about his faith, and he quotes to them the creed as used by the Nestorians in the 13th century. It is, roughly, the Nicene creed; but it has Nestorian clauses. Saumâ says that one of the Trinity 'clothed himself in a perfect man,' that our Lord has two natures, two hypostases, one person. Even now the Cardinals do not seem to suspect what he is. But they continue the discussion, and Saumâ incidentally denies the *Filioque*. The horrors of theological discussion are about to begin, when he says: 'I did not come here to argue with you, but to venerate the Lord Pope.' As there was at the moment no Lord Pope to venerate, Saumâ goes on to France, and arrives at Paris, where he sees King Philip IV. (1285-1314). Then he comes to 'Kasonio' (Gascogne, and there finds the King of 'Alangitar' (Angleterre), none other than our Edward I. (1272-1307). With him too, our traveller discourses. Edward says he means to fit out a crusade, and boasts (at that time he could) that in all Western Europe, though there be many kingdoms and governments, there is but one religion. This is the farthest point Saumâ reached. To travel from Pekin to Gascony in the 13th century is indeed an astounding feat. On his way back he stops again at Rome, finds Nicholas IV. elected (1288-1292), and pays homage to him with exceeding reverence. Nicholas is 'the Lord Pope, Katholikos, Patriarch of the Roman lands and of all Western people.'<sup>2</sup> He asks and obtains leave to celebrate his liturgy in Rome. The people say: "The language is different, but the rite is the same." Clearly they were no great scholars in liturgy. On Palm Sunday Saumâ attends the Pope's Mass and receives Holy Communion from him. This is probably the only time in history that a Nestorian has done so. He sees and describes all the Holy Week services in Rome. The Pope gives him relics 'because you have come from so far.' He had apparently received money from everyone after the manner of Nestorians who come to Europe. At last he arrives home again and tells all his adventures to Argon Khân, 'who was glad and exalted with joy.'<sup>3</sup>

How interesting pages such as these, saved from the wreck

<sup>1</sup> Honorius IV. (*died*: April 3, 1287).

<sup>2</sup> "One would not, of course, expect a Nestorian to admit more than this. But the surprise of seeing this Chinese Christian seems to have made the Romans easily satisfied with his position." (A. F.)—Was Mar Sauma of Chinese origin or a Syrian born in China?

<sup>3</sup> Cf. A. Fortescue, *The lesser Eastern Churches*, pp. 98-99, referring to Chabot's *Histoire de Mar Jab Alaha*, *op. cit.*

of time! If the history of Christianity in India before the Portuguese is to make any advance, it is to the Syrians, both in Malabar and Mesopotamia, and to Italy that we have to look. Even the Chinese annals at times throw light on the Christians of India.

John de Mandeville does not appear to have copied from anyone when he wrote of Quilon: "Thither go merchants often from Venice to buy pepper and ginger."<sup>1</sup> The period then between Marco Polo and the Portuguese, a period for which nearly all our European accounts of India were written by Italian merchants and missionaries, could be enriched by new itineraries from Italy. Other European countries too could be made yet to bring their tribute to the altar of knowledge: for we may well think that what attracted still many Christians to India before the Portuguese was, not only its spices and precious stones, but the shrine of St. Thomas.

Angelo de Gubernatis writes in his *Storia dei Viaggiatori Italiani nelle Indie Orientali*, Livorno, 1875, pp. 7-8. "After that time [i.e. after the *Pratica della Mercatura*, by Francesco Balducci Pegolotti of Florence, compiled in 1335],<sup>2</sup> we have sundry itineraries. Of one of these, entitled *Iter eunti de Venetiis ad Indiam, ubi jacet corpus beati Thomae Apostoli* [Itinerary for one going from Venice to India, where rests the body of the Blessed Apostle Thomas], there exists a MS. codex in the Magliabechiana. The itinerary shows the way by Rhodes, Jerusalem, Gaza, Salara, Aidab, Adam, Monte Maria, Ethiopia (*sic*), Charam ("now, in that city are crowned all the kings who are subject to Prester John (*qui Presto Johanni sunt subditi*). They say also that in that town there is a finer basilica than any to be found in the whole world"), Anghuda, Schiahua<sup>3</sup> ("in four days you might finish your journey up to India, where rests the body of the venerable and glorious Apostle St. Thomas, through whom the Lord God shows innumerable miracles. For many reasons it is difficult for anyone to go farther. And few foreigners who go farther return thence.")<sup>4</sup> Evidently the compiler of this itinerary, besides

<sup>1</sup> Quoted from Yule's *Friar Jordanus*, p. xv.

<sup>2</sup> Yule in his *Hobson-Jobson*, 1st. edn., p. xli, says it was written c. 1343, and "published by Gian Francisco Pagnini del Ventura of Volterra in his work *Della Decima*, etc., Lisbon e Lucca (really Florence), 1765-66, 4 vols., 4to. Of this work it constitutes the 3rd volume. Extracts translated in *Cathay and the Way thither*, q. v. The 5th volume is a similar work by G. Uzzano, written c. 1440." At p. xlv, Yule calls Uzzano's book *Pratica della Mercatura*, and says it forms the 4th vol. of *Della Decima*.

<sup>3</sup> Might Anghuda be Angediva, an island at some distance from Goa? In that case, Schiahua is perhaps the Shikali of Abulfeda, the Cyngilin of Odoric, i.e., Cranganore. Cf. Yule's *Cathay*, 1866, II. 455.

<sup>4</sup> So then the Venetian travellers whom John de Mandeville brings to Quilon would have gone to pay their respects to Messer St. Thomas, and that was for most of them the Ultima Thule of the East.

being a very ignorant person, never saw India.<sup>1</sup> It would, however, be interesting if we had the explanation of the words which the itinerary says should be known by one travelling between Jerusalem and the country of Prester John (*Presto Giovanni*); to my knowledge, they are certainly neither Arabic, nor Turkish, nor Indian, nor similar to any of those languages. The author of the itinerary says they belong to the Ethiopic language; I should think they are Persian, because of the word *fars* used for 'horse,' which, though called in Persian *esp* (Sanskrit. *aśva*; Zend, *aśpa*), might have been designated as 'Persian,' since the best horses were brought from Persia; but, as for the other words in the itinerary, either they do not sound at all like Persian, or, if they do, as perhaps the word *chabul*, we cannot find in Persian anything coming near their meaning.<sup>2</sup> Of the same time probably there is in the Riccardiana (cod. 1910) another itinerary by a certain "Friar Antonio, the companion of a certain Friar Thomaso, who had been in the Indies."

de Gubernatis (*op. cit.*, p. 98) still mentions as dedicated to Philip of Valois a *Directorium ad faciendum passagium transmarinum per quemdam fratrem O.P. scribentem experta et visa potius quam audita* [Directory for the journey across sea, published by a certain Friar of the Order of Preachers, who writes of what he has experienced and seen rather than of what he has heard.]

These are only some of the many sources yet unexplored by our historians. There are besides a number of legends, such as John of Hese's Itinerary, the contents of which about St. Thomas, borrowed may be from earlier works and however extravagant, could perhaps be made to yield meanings unsuspected heretofore.<sup>3</sup>

Such work, must we say it, cannot be attempted in India. It requires another Yule in Europe.

<sup>1</sup> That should be examined. At any rate, his descriptions of Malabar and Mylapore would be worth having, even if obtained at second-hand.

<sup>2</sup> "Anyhow, those wishing to consult the said codex of the Magliabechiana, will find it marked in the Catalogue with the numbers II, IV, 109."—Note by de Gubernatis.

<sup>3</sup> He claims, however, to have visited the East. Cf. Yule's *Cathay*, II (1866), p. 326.

#### ADDITIONAL NOTES.

While this paper was going through the press, it was but natural that many new passages should come in my way, which might have been made use of to elucidate my subject. In Calcutta, in January 1923, I found much curious material in John de Mandeville's book of wonders, a veritable hotch-potch of old and new, real and unreal, personal and borrowed, in proportions to me unverifiable. Then during a journey to the South, which brought me back to Mylapore and Trichinopoly, certain things struck me as worthy of record. These results are embodied in these further notes, and the headings will readily enable the reader to see their connection with the subject of my paper.

P. 159. 1. *No fly sits on putrified meat at the place where St. Thomas was first buried.*—Sir John de Mandeville has something more or less to the same effect in connection with the Convent of St. Catherine on Mount Sinai: Ch. 5 [P. 73] "In that Abbey entereth no fly, neither Toads nor Newts, nor such fowl venomous Beasts, neither Lice nor Fleas, by the Miracle of God and of our Lady. For there were wont to be so many such manner of [P. 74] Filths, that the Monks were in Will to leave the Place and the Abbey, and were gone from thence upon the Mountain above to eschew that Place; and our Lady came to them and bade them turn again, and from this forwards never entered such Filth in that Place amongst them, nor never shall enter hereafter."

Cf. Constable's edition, 1895. Have these remarks also been copied from William of Boldensele, and are they to be found in Schiltberger?

P. 158. 2. *The lamp at St. Thomas' tomb not extinguished by the wind.*—A similar notion prevailed in England in the Middle Ages with regard to lamps within tombs. I find in *Mores Catholici, or Ages of Faith*, by H. Kenelm Digby, Vol. I, New York, Benziger Bros., 1905, p. 811:—

"Camden and Weever relate that, at the suppression and demolition of the abbeyes in York, burning lamps were found in many tombs the flame of which it was said could not be extinguished by wind or water.

"This practice seems to have greatly struck the poetic imagination of the Minstrel, who has so grandly described the midnight opening of the grave of Michael Scott in Melrose Abbey:—

Lo, warrior! now the cross of red  
Points to the grave of the mighty dead;

Within it burns a wondrous light,  
To chase the spirits that love the night.

“These are the monk’s words to Sir William of Delorain. And when the grave stone has been raised, we read, of the lamp within the tomb, that—

No earthly flame blazed e’er so bright.  
It shone like Heaven’s own blessed light,  
Showed the monk’s cowl, and visage pale,  
Danced on the dark-brow’d warrior’s mail,  
And kissed his waving plume.”

It is still a common practice among the Christians of Southern India to burn lamps on tombs. Armenian graves often have a niche to keep lamps in. Whether the practice came from Europe or from Asia, I cannot say. It was very prevalent in the West, as we see in H. Kenelm Digby, *op. cit.*, pp. 810–811 :

“The body of the blessed St. Francis is placed in a vault under the Marble Chapel in the great Church of Assisi. It stands in an upright posture; but the vault having been shut by Gregory IX, no one can enter to behold it. A small opening, however, is left, through which a person may look by the light of a lamp burning in it. In the Convent of the Poor Clares of Assisi, in a vault under the high altar, lies the body of St. Clare, with a lamp burning before the opening into it. This was an ancient custom as may be collected from the mode of episcopal burial in the thirteenth century, according to the description of the tomb of the Bishop of Angers. He was buried in the mitre in which he had been consecrated, his crosier was by his side, and on his breast was placed the chalice, and a lead paten, containing wine and bread, and, in this instance, behind his head there was a kind of channel in which was a lamp lighted with oil, so that, when the sarcophagus was closed, the light of that burning lamp shone within upon the body through the opening. (Guillelmi Majoris Episcopi Andegav. *Gesta apud Dacher. Spicileg. Tom. X.*)”

P. 154. 3. *No heretic or infidel can live among the Christians at the place whence came the Patriarch of the Indians about 1124.*—Compare with this a statement in Sir John de Mandeville, where it is the other way about. “That is the best City that the Emperor of Persia hath in all his Land. And they call it Charabago and others call it Vapa. And the Paynims say that no Christian Man may long dwell or endure with his Life in that City, but dieth within short Time, and no man knoweth the Cause.” Ch. 13, p. 182, of Constable’s edition, 1895.

This curious reflection is also to be found in Friar Odoric, but in connection with the town of Yezd in the great Persian

desert. "This is the third best city which the Emperor of the Persians possesses in his whole realm. The Saracens say of it that no Christian is ever able to live in it beyond one year. And there be many other matters there." Cf. Yule, *Cathay and the way thither*, Vol. 1, 1866, p. 52.

The Charabago of de Mandeville must be Karabāgh of Persia, built by Timur.

P. 170. 4. *Oil from Church lamps still considered sacred at San Thomé.*—On January 17, 1923, as I was kneeling before the crypt of St. Thomas' tomb at San Thomé Cathedral, during my thanksgiving after Mass, I noticed that a small Tamil boy, whose mother had just received Holy Communion and was kneeling daily near the railing of the crypt, went to one of the lamps burning at the railing, dipped into the oil the tip of his finger, next touched himself with it in the centre of the forehead, and then went to do the same to his mother, who went on with her prayers in her prayer-book, as if nothing were the matter. My mind flew back eight centuries, to Mar John III.'s own curious days, though, doubtless, what I had witnessed was just a common practice all over Southern India among our Christians, yet a practice connecting them somehow with the St. Thomas Christians of Malabar. A little later, a sacristan came with a tiny cup, took with it some of the oil in the burning lamps, and carried it off to the sacristy, evidently for some person or other who had asked for it. Greatly interested, I counted the lamps at the brass railing (four of them, with brackets for another four), and I noted the occurrence in my diary.

P. 173. 5. *Receiving Holy Communion from the hands of images.*—The Emperor Michael II. (820-829), in his letter to Louis the Pious, describes the excesses of the image worshippers: "They have removed the holy cross from the churches and replaced it by images before which they burn incense. . . . They sing psalms before these images, prostrate themselves before them, implore their help. Many dress up images in linen garments and choose them as god-parents for their children. Others who become monks, forsaking the old tradition, according to which the hair that is shorn off is received by some distinguished person, let it fall into the hands of some image. Some priests scrape the paint off images, mix it with the consecrated bread and wine and give it to the faithful. Others place the body of the Lord in the hands of images from which it is taken by the communicants. Others again, despising the churches, celebrate Divine Service in private houses, using an image as an altar." (Mansi, XIV, 414-422, Hefele-Leclercq, III. 2, 612.) Cf. *Cath. Encycl.*, New York, VII. 668 b.c.

P. 174. 6. *The earth taken from St. Thomas' tomb was found replaced the next day.*—Compare with a statement in Sir John de Mandeville. "And there nigh [the City of Acre in

Palestine] is the Foss of Mennon that is all round; and it is 100 Cubits of Largeness, and it is all full of Gravel shining bright, of the which Men make fair and clear Verres (or Crystal Glasses). And Men come from far, by Water in Ships, and by Land with Carts, to fetch of that Gravel. And though there be never so much taken away thereof in the Day, at the Morrow it is as full again as ever it was; and that is a great Marvel..." Ch. 5, p. 42 of Constable's edition, 1895.

P. 176. 7. *Swearing by the hand of St. Thomas*.—The passage reads thus in John de Mandeville's archaic English (Ch. 16. Of the Domes made by seynt Thomas...): "From that Contree men passen by many Marches toward a Contree, a 10 journeyes thens, that is clept Mabaron; and it is a gret Kyngdom, and it hath many faire Cytees and Townes. In that Kingdom lithe the body of seynt Thomas the Apostle, in Flesche and Bon, in a faire Tombe in [P. 172] the Cytee of Calamyne: for there he was martyred and buryed. And men of Assirie beeren his Bodeye in to Mesopotayme, in to the Cytee of Edisse, and aftre, he was brought thidre azen. And the Arm and the Hond, (that he putte in oure Lordes syde, whan he appered to him, aftre his Resurrexioun, and seyde to him, *Noli esse incredulus, set<sup>1</sup> fidelis* is zit lyggynge in a vessel with outen the Tombe. And be that Hond thei maken alle here Juggementes, in the Contree, whoso hathe righte or wrong. For whan ther is ony dissentioun between 2 partyes, and every of him meyntenethe his Cause, and seyth, that his Cause is rightfule, and that other seythe the contrarye, thanne bothe partyes writen here Causes in 2 Billes, and putten hem in the Hond of seynt Thomas; and anon he castethe away the Bille of the wrong Cause and holdethe stille the Bille with the righte Cause. And therefore men comen from fer Contrees to have Juggement of doutable [P. 173] Causes; and other Juggement usen thei non there. Also the Chirche, where seynt Thomas lythe is bothe gret and fair, and alle fulle of grete Simulacres: and tho ben grete Ymages, that thei clepen here Goddes; of the whiche, the leste is als gret as 2 men." Cf. *The Voiage and Travaile of Sir John de Maundeville, Kt.* . . . Reprinted from the edition of A.D. 1725. . . by J. O. Halliwell. . . London, . . . M. DCCC. LXVI, pp. 171-173.

On January 30, 1923, as my diary testifies, I related this very story of St. Thomas' hand to the Bishop of Macao, who had arrived from Cochin the day before, after his visit to the Exposition of St. Francis Xavier's body at Goa, and who was about to leave us the next day for Macao. Much surprised, the Bishop remarked that, at the Catholic Syrian Church at Aleppey, he had noticed a hand holding a cross issuing from the pulpit. It was my turn to be surprised. The Bishop had

asked for the meaning of the hand, and had been told that it was a symbol of evangelisation, whereupon I suggested that, if His Lordship had pressed hard for an answer to the question, "Of whose evangelisation?" the answer might have been "Of St. Thomas." Possibly, the Malabar Christians would swear by the hand and the cross above the pulpit in their churches, or lay in the hand their bills of contention, call it St. Thomas' hand, and, when asked for further explanation, relate the story of St. Thomas' hand, which would not hide itself in the tomb at Mylapore. Later on, when the pulpit and the emblem at Mylapore had disappeared, they would say that the hand had disappeared in the grave, because the Chinese, or some Hindu, or Muhammadan prince wanted to cut (?) off.

P. 170n. 1. 8. *Lamps relighting of themselves. Schiltberger and Mandeville copying William of Boldensele apparently.*—What I quoted from John Schiltberger about lamps at the Convent of St. Catherine on Mount Sinai and at the Holy Sepulchre is also found earlier in de Mandeville, chs. 5 and 7.

Ch. 5. [P. 72] "Also, when the Prelate of the Abbey [of St. Catherine's, Mount Sinai] is dead I [P. 73] have understood, by Information, that his Lamp quencheth. And when they choose another Prelate, if he be a good Man and worthy to be Prelate, his Lamp shall light with the Grace of God without touching of any Man. For every one of them hath a Lamp to himself and by their Lamps they know well when any of them shall die. For when any one shall die, the Light beginneth to change and to wax dim; and if he be chosen to be Prelate, and is not worthy, his Lamp quencheth anon .."

Ch. 7. [P. 93]. "And there is a Lamp that hangeth before the Sepulchre [of Our Lord at Jerusalem], that burneth alight, and on the Good Friday it goeth out by himself, and lighteth again by himself at that Hour that Our Lord rose from Death to Life."

These quotations are from Constable's edition of de Mandeville, 1895.

H. Yule (*Encycl. Britann.*, 9th edition, XV, 474-475) states that much of de Mandeville's account of Egypt, of the Convent of Mount Sinai, and of the Church of the Holy Sepulchre is on the lines of the itinerary of the German knight William of Boldensele, written in 1336 at the desire of Cardinal Talleyrand de Perigord, and published in the *Thesaurus* of Canisius, 1604, V. pt. II, p. 95, and in the edition of the same by Basnage, 1725, IV, 337.

*The Darjeeling Advertiser*, July 4, 1923, gives an account of a book, *Men, Beasts and Gods*, published by Edward Arnold, in which the author, a Russian, Dr. Ferdinand Ossendowski, who is suspected of being a regular Munchausen, says of the Tashi Lama of Tibet that at his command "the lamps and candles before the ancient statue of Buddha light themselves, and the

ikons of the gods begin to speak and prophesy." We quote this Russian only to show how the legend of lamps relighting of themselves has perhaps persisted in his own Church. If the Russian reported correctly what he heard, we might have again here for Tibet a case of borrowing from Nestorianism, or an early belief common to many Eastern religions.

P. 178. 9. *Chinese (Christians?) coming on pilgrimages to St. Thomas' tomb before A.D. 1500.*—The following is taken from a rare work printed at only 25 copies: The Italian version of a Letter from the King of Portugal (Dom Manuel) to the King of Castille (Ferdinand). Written in 1505, giving an account of the voyages to and conquests in the East Indies from 1500 to 1505 A.D. Reprinted from the Copy (printed by J. Besicken at Rome in 1505) in the Marciana Library at Venice, (one of the three now in existence), with Notes, etc., by A. C. Burnell, Ph.D.; London; Printed—not for sale—by Messrs. Wyman & Sons, 1821.

After referring to the arrival at Cochin, on Dec. 23, 1500, of the second armada under Pedralvares Cabral, the writer mentions the St. Thomas Christians of Malabar and tells us what the Portuguese learned from them about St. Thomas' tomb. [P. 6.] "De li inteseno che il corpo de santo Thoma e lontano da Cuchin CL. leghe alla costa del mare in vna cittade chiamata Mailapûr de pocho popolo & portorno terra de la sua sepultura: la quale per li molti miraculi e frequentata da christiani & da tutte quelle nationi. Et cusi hanno portati qui dui christiani sacerdoti: li quali con licentia del suo p̃lado sono venuti per andare a Roma & in Jerusalem: p'che teneno che li Ecclesia d'santo Pietro sia meglio gouernata ch' la loro. *Preterea inteseno che vltra la dicta casa d'sancto Thoma sono molte populationi de christiani; li quali veneno in peregrinatione al dicto sancto. Sono homini bianchi & de capelli zalli: ochi verdi: & fortissimi: la lor principal terra chiamono Malchina: doue veneno vasi grandi & belli de porcellana: muschio: ambra: & legna aloes ch' haïo dal fiume Gange ch'e fra loro.*"

Malchina is of course Mahāchina, or Great China, and the two Christian priests who had come to Portugal were Syrians, Joseph (known as Josephus Indus) and his brother Matthew. Josephus Indus is made to say in *Itinerarium Portugallensium*, Milan, 1508, (f. LXXXIII, in Ch. CXXXIII): "Christiani omnes indi: et regni cataii: eorum pontifex catholica dicitur... praeficit patriarchas suos, ut dictū est, alterum in india: in cataio alterum."

P. 180. 10. *St. Thomas in the sea.*—In *Zeitschrift der Morgenländischen Gesellschaft*, Vol. XXX, pp. 260–405, R. Schröter published Jacob of Sarug's letter to the Himyarite Christians of Najran. Among the notes at p. 586, Schröter speaks of a variant in Cod. Nitr. V (now numbered: Cod. Syr. 117), verse 120, from which I gather that some one

(St. Thomas or Gondophares?) asked whether it was possible to build without foundations in the sea. This would suit the Malabar legends of Gondophares' palace now buried in the sea at Mylapore. It would not suit the palace built by St. Thomas at a town of Gondophares far inland on the side of Sind.

The idea of Julai, Tathagata, or Nyorai, a title corresponding in China and Japan to the Christian Messiah, dates from the time when Nāgārjuna, a native of Western India, received the hidden doctrine from an iron tower below the sea in Southern India. Cf. Mrs. E. A. Gordon, *World-Healers or the Lotus Gospel and its Bodhisattvas*, 2 vols., Tokyo, The Marusen Kabushiki-Kaisha (after 1912), pp. 12, 18, 20, 29n. 1, 416.

P. 189. 11. *The vine of St. Thomas and the vine of St. John*.—Sir John de Mandeville speaks of a vine planted by St. John on Mount Sinai. "And then nigh [the Chapel of Elijah the Prophet] is the Vine that Saint John the Evangelist planted, that Men call Raisins (Staphis)." Ch. 5, p. 74 in Constable's edition, 1895.—Staphis, from the Greek, σταφύλη, a bunch of grapes.

P. 198. 12. *Prester John's sixty-two kingdoms*.—Mrs. E. A. Gordon in her *Asian Cristology*, p. 163, a work not now with me, has a passage on the 62 warring tribes of China. Numerous other passages on the same number, or on the number 72, may probably be found elsewhere, judging from faint recollections of my late readings.

P. 205. 13. *The fountain of youth visited by Sir John de Mandeville*.—We read in *The Marvellous Adventures of Sir John Maundeville*, Kt., Westminster, Archibald Constable and Co., 1895, Ch. 15, p. 206.

"And at the Foot of that Mount [a great mount called Polombe near the city of Polombe, which is Coulam, Quilon] is a fair Well and a great, that hath Odour and Savour of all Spices. And at every Hour of the Day he changeth his Odour and his Savour diversely. And whoso drinketh 3 Times of that water of that Well he is made whole of all manner of Sickness that he [P. 207] hath. And they that dwell there and drink often of that Well they never have Sickness; and they seem always young. I have drunken thereof 3 or 4 Times, and methinketh I fare the better yet. Some Men call it the 'Well of Youth.' For they that often drink thereof seem always young-like, and live, without Sickness. And Men say that Well cometh out of Paradise, and therefor it is a virtuous."

It strikes me now, that, if Sir John did not here copy from Prester John's letter, he may indeed have been in India, on the side of Quilon. He is probably more explicit than Prester John in his mention of Polombe. It may very well have been that near some Christian Church of the St. Thomas Christians the water of a well was credited with marvellous

properties. The Malabar Christians by saying that it issued from Paradise would have spoken of Ceylon.

The place with the Well of Youth was possibly Maleatur, a sanctuary in Malabar, dedicated to St. Thomas the Apostle, and situated on the top of a mountain. Perhaps it has even yet a well at the top or at the foot, like the fountain at the top of Little Mount, San Thomé, Mylapore. The latter is said to owe its origin to St. Thomas, who, while preaching on the rock of Little Mount to great multitudes, took pity on them and, striking the rock with his staff, caused a copious source to issue forth at which his hearers slaked their thirst. The water is believed to have miraculous properties.

I think the more readily of a Christian well in Malabar, as there are in Malabar wells or springs considered to be miraculous. I found half a dozen wells with crosses at San Thomé and in the vicinity of (Great) St. Thomas Mount, Mylapore. One such well, at the very foot of St. Thomas Mount, had 40 crosses in the 20 rings of the brickwork. The crosses were in pairs, the two at the top being disposed, say, east and west, and the two in the ring below facing north and south. Crosses were evidently placed in wells to communicate to the water a special virtue of wholesomeness. And the custom at Mylapore is evidently a survival of a similar custom once prevalent among the pre-Portuguese St. Thomas Christians of Coromandel.

P. 201. 14. *Deserted Babylon and the body of the Prophet Daniel*.—A similar description of the desert is to be found in Friar Jordanus: "Of Caldea I will say not much, but yet what is greatly to be wondered at, to wit, that in a place of that country stood Babylon, now destroyed and deserted, where are hairy serpents and monstrous animals. In the same place also, in the night season, are heard such shoutings, such howlings, such hissings, that it is called Hell. There no one would dare to pass a single night, *even with a great army*, on account of the endless terrors and spectres." Cf. *Mirabilia descripta, The wonders of the East*, by Friar Jordanus, translated by H. Yule, London, Hakluyt Society, 1863, ch. 9, p. 49.

Yule has not suggested that John de Mandeville copied anywhere Friar Jordanus, yet we find similar reflections in the worthy Knight. "But it is full long since that any Man durst nigh to the Tower of Babel, for it is all deserted and full of Dragons and great Serpents, and full of diverse venomous Beasts all about." Ch. 5, pp. 50-51 of Constable's edition, 1895.

Friar Odoric says that he passed by the tower of Babel, but he does not allude to the horrors of the place. Cf. Yule's *Cathay and the way thither*, 1886, vol. 1, p. 54.

In Ch. 29, p. 370 (Constable's edition, 1895), Sir John de Mandeville speaks of the trees of the sun and moon which spake to King Alexander and warned him of his death. These

trees were in a desert, in which was the fruit of the balm which, when eaten, made men live 400 or 500 years. The desert is described thus, and seems to be the Desert of Babylon again: "We would have gone toward the Trees full gladly, if we had might. But I trow that 100,000 Men of Arms might not pass the Deserts safely, for the great Multitude of wild Beasts and of great Dragons and of great Serpents that there be, that slay and devour all that come anent them."

On the trees that spake to Alexander see Yule's *Marco Polo* (1875), II. 131 ff.

P. 202. 15. *Amazons in Southern India*.—The subject of bodies of fighting women at the courts of Indian Princes, chiefly in the South, is one that turned up so repeatedly in the course of my readings that I considered it useless to note references. However, on February 16, 1923, the last day I spent at St. Joseph's College, Trichinopoly, I noted in one of the books of the library (*Descriptive and Historical Papers relating to the Seven Pagodas*, edited by Capt. M. W. Carr, Madras, 1889, pp. 60-61) a picture of a three armed woman who had only one breast, the left one. My notes show that two of her arms were right arms, one of which was raised or blessing, while the other held a battle-axe. What the third arm was doing, I did not note. Above her head was an inscription, perhaps her name. Did not the Amazons burn their right breast to be more dextrous in handling the bow? This sculptured woman had no bow, however.

What struck me most in the pictures of that book was the typically Egyptian look of many of the figures, a point not sufficiently commented on, I believe, by the writers of those papers. And those sculptures appeared to be fully two thousand years old!

P. 202. 16. *Prester John's two carbuncles shining at night*.—John de Mandeville says something similar about the Emperor of Cathay. "The Emperor hath in his Chamber, in one of the Pillars of Gold, a Ruby and a Carbuncle of half a foot long, that in the Night giveth so great Lustre and Shining that it is as light as Day." Ch. 22, p. 295, in Constable's edition, 1895.

The accounts of the ruby in the possession of the King of Ceylon, written by Marco Polo and Ibn Batuta, are perhaps worth quoting. Says Marco: "The King [of Ceylon] has the most beautiful ruby that ever was or can be in the whole world. It is the most splendid object on earth, and seems to glow like fire: it is of such value as money could scarcely purchase." Cf. *Mirabilia descripta, The Wonders of the East*, by Friar Jordanus, translated by H. Yule, London, Hakluyt Society, 1863, p. 30n. 2, quoting Marco Polo, III, 17.

And Ibn Batuta: "I also saw in the possession of the King [of Ceylon] a saucer made of ruby, as large as the palm

of the hand, in which he kept oil of aloes. I was much surprised at it, when the king said to me. "We have much larger than this." *Ibid.*, p. 30n. 2, quoting Ibn Batuta, p. 187.

On January 15, 1923, in the evening, while driving with Mgr. A. M. Teixeira from Fort St. George along the Marina to San Thomé, Mylapore, I wondered at two bright red lights shining from a high tower in the distance, and I was told by my companion that the light came from Government House and indicated that the Governor was at home. Might not this simple fact, I thought, help us to understand Prester John's two carbuncles illuminating the night?

P. 198. 17. *In my country no poisons hurt, said Prester John. There are no thieves or murderers.*—An old boast. Of the Isle of Bragman, or the Brahmans, visited by Alexander, we read in Sir John de Mandeville: "In that Isle is no Thief, nor Murderer, nor Common Woman, nor poor Beggar, nor ever was Man slain in that country... And because they be so true and so righteous, and so full of all good Conditions, they were never grieved with Tempests, nor with Thunder, nor with Lightning, nor with Hail, nor with Pestilence, not with War, nor with Hunger, nor with any other Tribulations as we be many Times, amongst us, for our Sins." Ch. 29, p. 363 of Constable's edition, 1895. Compare also with the Latin passage quoted from the Si-ngan-fu stele, in additional note.

Could Sir John de Mandeville's text be traced back to any of the texts on India collected by McCrindle? I have failed to trace it in the index of McCrindle's *Ancient India*, Westminster, A. Constable, 1901.

P. 205. 18. *Prester John's truth-reflecting mirror.*—The idea seems to be an Eastern one, judging from what Mrs. E. A. Gordon has to say in several of her books. I refer the curious to the index of her *World-Healers* and of her anonymous *The Temples of the Orient*, London, Kegan Paul, Trench, Trübner & Co., 1902. "Note that in the *Pilgrim's Progress* [by Bunyan] a Magic Mirror in the Shepherd's Palace is described which reveals the Soul to itself, and also 'reflects the very face of the Prince of Pilgrims himself', because a similar Mirror is found in Shinto and in Buddhist temples with Buddha at the Prow of the Sacred Boat, which bears the Mikôshi across the sea at Miyajima, and on the reverse side a scene from *Gôkuraku*—Paradise, or else the Buddha himself!" Cf. Mrs. E. A. Gordon, *World-Healers*, II 377.

P. 204. 19. *Passages in the "Si-ngan-fu stele similar to passages in Prester John's letter.*—"Juxta Occidentalium regionum illustratam memoriam, et Han Wei que historicos codices, Magnae T'sin regnum, meridie comprehendit rubri coralli o Mare, septentrione attingit omnis pretiosus montes, occidente spectat Immortalium fines floridasque sylvas; oriente excipit continentem ventum debilesque aquas. *Ejus*

*territorium producit igne abluendam telam, revocans animam aroma, claritatis lunaris uniones, noctuque radiantes gemmas. Mores carent latrocinio furtoque; populus fruitur gaudio paceque."* Cf. *Variétés Sinologiques*, No. 20; *La Stèle chrétienne de Si-ngan-fou*, III<sup>e</sup> partie, par le P. Henri Havret, S. J., Chang-Hai, Imprimerie de la Mission Catholique, Orphelinat de T'ou-sè-wè, 1902, p. 57, col. 1.

The o's above represent a Chinese character in the stèle.

At p. 59, *ibid.* it is said of Kien-tchong: "Face praeest hominum secretioribus, speculo intuetur rerum varietates."

Is not the last expression, "speculo intuetur rerum varietates," echoed by the mirror in which Prester John could discern everything that went on in his dominions, and detect conspiracies?

P. 206. 20. *Sir John de Mandeville quoting Prester John's letter.*—Even after H. Yule's note of warning in the *Encyclopaedia Britannica*, Vol. XV, pp. 473–475 (9th edition), my ideas of Sir John de Mandeville received a severe shock when I caught him copying whole passages from Prester John's letter. In ch. 27, of Constable's edition, 1895, we read:

[P. 338.] "For in this Country [of Prester John, divided into 12 provinces]<sup>1</sup> is the Sea that Men call the Gravelly Sea, that is all Gravel and Sand, without any Drop of water, and it ebbleth and floweth in great Waves as other Seas do, and it is never still nor at Peace, in any manner of Season. And no Man may pass that Sea by Ship, nor by any manner of Craft, and therefore may no Man know what Land is beyond that Sea. And albeit that it have no Water, yet Men find therein and on the Banks full good Fishes of other manner of Nature and Shape, that Men find in any other Sea, and they be right good Taste and delicious for Man's Meat.

"And a 3 Days' journey long from that Sea be great Mountains, out of which goeth out a great [P. 341] River that cometh out of Paradise. And it is full of precious Stones, without any Drop of Water, and it runneth through the Desert on the one Side, so that it maketh the Sea gravelly: and it runneth into that Sea, and there it endeth. And that River runneth, also, 3 Days in the Week and bringeth with him great Stones and the Rocks also therewith, and that great Plenty. And anon, as they be entered into the Gravelly Sea, they be seen no more, but lost for evermore. And in those

<sup>1</sup> The number 12 plays a great part in Mandeville's account of China: so it does in Odoric's and Marco Polo's. According to de Mandeville's Ch. 22 (p. 298 of Constable's edn., 1895), the Empire of the Great Khān is divided into 12 provinces with 12 principal kings (see also Ch. 19, p. 260): the City of Cassay had 12 principal gates (Ch. 19, p. 256); the City of Caydon in Cathay had 12 gates, and between every two gates there was always a great mile (Ch. 20, p. 265).

3 Days that that River runneth, no Man dare enter into it; but on other Days Men dare enter well enough.

"Also beyond that River, more upwards to the Deserts, is a great Plain all gravelly, between the Mountains. And in that Plain, every Day at the Sun-Rising, begin to grow small Trees, and they grow till Mid-Day, bearing Fruit, but no Man dare take of that Fruit, for it is a thing of Faerie. And after Mid-Day, they decrease and enter again into the Earth, so that at the going down of the Sun they appear no more. And so they do, every Day. And that is a great Marvel.<sup>1</sup>

"In that Desert be many Wild Men, that be hideous to look on; for they speak nought, but they grunt, as Pigs. And there is also great Plenty of wild Hounds. And there be many Popinjays (or Parrots), that they call Psittakes<sup>2</sup> in their language. And they speak of their own Nature, and say, "Salve!" (God save you!) to Men that go through the Deserts, and speak to [P. 312] them as freely as though it were a Man that spoke. And they that speak well have a large tongue, and have 5 Toes upon a Foot. And there be also some of another manner, that have but 3 Toes upon a Foot, and they speak not, or but little, for they cannot but cry.<sup>3</sup>

"He [Prester John] dwelleth commonly in the City of Susa. And there is his principal Palace, that is so rich and noble that no Man will believe it by Estimation, but he had seen it. And above the chief Tower of the Palace be 2 round Pommels or Balls of Gold, and in each of them be 2 Carbuncles great and large, that shine full bright upon the Night. And the principal Gates of his Palace be of precious Stone that Men call Sardonyx, and the Border and the Bars be of Ivory. And the Windows of the Halls and Chambers be of Crystal. And the Tables whereon Men eat, some be of Emeralds, some of Amethyst, and some of Gold, full of precious Stones; and the Pillars that bear up the Tables be of the same precious Stones. And of the Steps to go up to his Throne, where he sitteth at Meat, one is of Onyx, another is of Crystal, and another of green Jasper, another of Amethyst, another of Sardine, another of Cornelian, and the 7th, that he setteth his Feet on, is of Chrysolite. And all these Steps be bordered with fine Gold with other precious Stones, set with great orient Pearls. And the Sides of the Seat of his Throne be of Emeralds, and bordered with Gold full nobly,

<sup>1</sup> I cannot give any rational explanation about the trees which grew till mid-day even after reading Yule's long notes on *Arbol Sec* and *Arbol sol* in his *Marco Polo*. See index there. The descriptions of *Arbol triste* do not suit the case either.

<sup>2</sup> *Lat.*: *Psittacus*, parrot.

<sup>3</sup> There is much in the above paragraph which I do not remember having read anywhere else, and which may be the result of actual travelling in some parts of India.

and dubbed with other precious Stones and great Pearls. And all the Pillars in his Chamber be of fine Gold with precious Stones, and with many Carbuncles, that give bright upon the Night to all the People. And albeit that the Carbuncles give Light right enough, nevertheless, at all Times burneth a Vessel of Crystal full of Balm, to give sweet Smell and Odour to the Emperor and to void away all [P. 344] wicked Eyes and Corruptions. And the Form of his Bed is of fine Sapphires, bound with Gold, to make him sleep well and to refrain him from Lechery: for he will not lie with his wives, but 4 times in the year, according to the 4 Seasons, and that is only to engender Children.

"He hath also a full fair Palace and a noble at the City of Nyse, where that he dwelleth, when it best liketh him; but the Air is not so temperate, as it is at the City of Susa."

Yule, *op. cit.*, 475, noted that ch. 27, on the royal estate of Prester John, was chiefly taken from the "Letter" of Prester John, with something from Hayton. I can only wonder at the discrepancies between Sir John's account and the text translated from Assemani.

P. 206. 21. *Prester John's letter emanating from Asia, not from Ethiopia.*—We trust that our notes on Prester John's letter have made it clearer that it could not have been written from Ethiopia. The geography is that of Asia, and the legends are, we believe, those of the Nestorians in Mesopotamia, India and the Further East.

P. 209n. 1. 22. *One of the Magi from the land of Tharse.*—"The Kingdom of Cathay marcheth toward the West with the Kingdom of Thurse, of the which was one of the Kings that came to give Presents to our Lord in Bethlehem. And they that be of the Lineage of that King are, some of them, Christians." Cf. Sir John de Mandeville, ch. 24, p. 313, of Constable's edition, 1895. Halliwell's edition of 1866 has Tharse instead of Thurse. Is not this borrowed from Hayton, the Armenian historian?

23. *The lion and the Unicorn and St. Thomas.*—Another thing struck me greatly in the pictures of Capt. M. W. Carr's *Descriptive and historical papers relating to the seven Pagodas*, *op. cit.* Gods or goddesses, or heroes and heroines, are represented with the head of an animal on either side of them: in one case, the head of two elephants; in another case, a lion and what I took at first for an ass, till I noticed a long slender horn in the centre of the head. Here was the unicorn, and the heraldic device of the British arms, a lion and a unicorn, had been anticipated at the Seven Pagodas by... how many centuries? But, then, might St. Thomas not have been represented at first in ancient Christian Indian art with devices borrowed from symbolism such as we find at the Seven Pagodas, in close proximity to Mylapore?

Marignolli (1349) says that he was painted in the Churches—and he means no doubt India—as riding on an ass, accompanied by two lions and two slaves, and covered with a mantle of peacocks' feathers. Much in this symbolism remains to be explained. (Yule, *Cathay*. II. 375.)

In our notes on unicorns in connection with Prester John's cerastes, we quoted Claudius Ælianus, of the middle of the second century, speaking of one-horned horses and one-horned asses. Practically every one of the fabulous animals of our Latin and Greek classics is found depicted on the Bharut railing in the Indian Museum, Calcutta. Even the Egyptian sphinx is there. Would it not seem that the descriptions of the fabulous animals of India as we have them in our classics are merely descriptions of the fabulous animals of India's sculptures?

A lion and a unicorn-ass on either side of St. Thomas might eventually have developed into the picture of the ass ridden by the Saint, and of two lions accompanying him.

The animals of the Seven Pagodas are apparently an extremely ancient symbolism. In Buddhist art they are generally replaced by a small stupa (or an angel?) on either side of a Buddha or a Bodhisattva; in later Hindu art, by angels, tutelary genii (?), often holding a scroll. The latter practice is perhaps sufficiently near to our times to allow one to think of Persian or even Christian influences. Curious fixity of symbolisms. The two figures at the back of the throne of Queen Victoria before the Victoria Memorial Hall, Calcutta, seem to be a traditional artistic device derived from the symbolism of the angels noticed on the statues of our Hindu deities.

"The Lion and Unicorn are prominent at many Shintō shrines. They support Mikado's throne at Kyoto Palace, as well as the Crown in the Royal Arms of Great Britain and Ireland. . . Both Lion and Unicorn crouch at Buddha's feet at the entrance to the vast Mahâyâna Rock-temple at Ajanta, N. India." Cf. Mrs. E. A. Gordon, *World-Healers*, *op. cit.*, p. 331, n. 5.

"At Kompira Shrine in Tokyo, the Lions (called "the Heavenly dog *Ama inu*" and "the Korean dog *Koma-inu*") actually the Lion and the Unicorn—at the base of the second *Torii* have crisply curled hair." *Ibid*, p. 444. Crisped curly hair is peculiar to the lions of most of our Indian sculptures.

The lion and the unicorn support Buddha's throne in the Caves of the Thousand Buddhas at Tun-huang visited by Sir Aurel Stein, Cf. *ibid*, p. 538.

24. *St. Thomas' two lions and the two dogs of Fo*.—Mrs. E. A. Gordon has the theory that the Chinese god Fo is identical with S'âka, i.e., with Christ, and with St. Thomas, through some curious identification of St. Thomas and Christ,

which seems to have taken place in the East in the earliest centuries of our era. In this theory she was anticipated more than a century ago by Captain F. Wilford in his wonderful paper on the *Origin and Decline of the Christian Religion in India*, *Asiatick Researches*, X (1808), pp. 27-126.

"In a shrine at Tung-huan, Dr. Stein noted the Octagon base of the Chief Image and, elsewhere, found the Throne of Buddha supported by Lions with curled manes, which is a marked feature in a mandāra I lately found in a little village temple, where Shāka, wearing the Triple Rainbow-halo, is enthroned on a Lotus upborne by two Nāga-mermaidens, amidst the Signs of the Zodiac, *Leo's* mane being strongly curled." Cf. Mrs. E. A. Gordon, *World-Healers*, *op. cit.*, p. 444. where she compares the fact with de Marignolli's description of St. Thomas in his Indian paintings.<sup>1</sup> A MS. note, at p. 332 of the copy of *World-Healers* which she most obligingly sent me from Kioto, states that in a Korean mandāra, which she found at Seoul, April 1913, Shāka is seated on a true lion. "Illustrated in my *Symbols*, p —", and she compares the 'Dog of Fo', or 'the Chinese Lion' or 'the Korean Dog' to the Lion of Shāka's tribe (the Messiah's tribe, according to her). In her *Asian Crisology*, a book not now at my disposal, she states repeatedly, I believe, that in China the dogs of Fo are called Persian dogs, *i.e.*, lions, as there are no lions in China, and because, I fancy, the symbolism came from Persia.

25. *St. Thomas' mantle of peacocks' feathers and the King of Peacocks*.—Why should St. Thomas have been depicted with a mantle of peacock feathers? Was it because Mylapore, where the St. Thomas Christians believe him to have died, means Māyilapur, or Peacock Town? Or because, according to Marignolli (cf. Yule's *Cathay*, 1886, II. 375), there were numerous peacocks at the place where he was shot with an arrow? Or because, according to Marco Polo (*ibid.*, II. p. 375, *n.* 1), the Saint being engaged in prayer in the middle of the peafowl, a native aimed at one of them and shot him? Or, because, according to Duarte Barbosa, the Saint, transforming himself into a peacock, flew up, and, being shot, fell to the ground and there lay killed, in human form again? Clearly some further notions lie concealed under the legends recounted by de Marignolli, Marco Polo, and Barbosa. What may they be?

Mrs. E. A. Gordon (*World-Healers*, I. 124) writes of Huen T'sang: "He quotes a Northern Buddhist tradition that 'in old time, Tathāgata (*i.e.* Nyorai, or Messiah) was the King of Peacocks who brought water for his thirst-tormented followers out of a Rock by striking it with his beak. All afflicted ones

<sup>1</sup> By mistake she speaks of the two dogs, instead of the two 'lions,' of St. Thomas, (*Ibid.*, p. 444.)

who taste, or wash in, the abundant streams which flow therefrom are healed.' On the Rock traces of the Peacock's feet are visible."<sup>1</sup> No traces of peacock's feet are now visible at the Little Mount, Mylapore, the traditional site of St. Thomas' death; yet traces of St. Thomas' feet are still shown (!), even though other such traces have disappeared since 1500, and we not unnaturally think that the stories picked up by Hsüen T'sang might have been related even in Upper India by Christians in connection with the well at Little Mount, where St. Thomas quenched the thirst of his hearers. Or again these stories might have been borrowed from Christians and applied to Buddha by his worshippers.

There is more to be quoted from Mrs. E. A. Gordon's *World-Healers*. "In reading Hsüen T'sang's records I am struck by a group of facts connected with that region [Udayana, between Chitral and the Indus north of Gandāra], viz., the above Story of the PEACOCK; that of Sākra<sup>2</sup> taking the form of a SHEPHERD-boy and building a little TOWER which out-stripped in height Kanishka's great Stūpa (p. 22); that here were visible the Foot-prints of Buddha when He conquered the DRAGON (pp. 151, 349: [to which references the good old lady added in the copy presented to me: pp. 354, 413-414, 482]); that when famine and disease prevailed everywhere, Buddha, filled with pity, changed His Form from that of "Lord Sākra" into a great SERPENT, and called to those on every side to look, and the more the Serpent's body was cut the more they revived and were delivered from both famine and disease (cf. Sōtōba, pp. 152, 318); and, lastly, the effect of the picture of Buddha's sufferings when in the Form of Vessantāra, "the Giving King," on the Indo-Scythic tribes of this region (p. 16.<sup>3</sup> *Buddhist Records*, vol. 1, p. 119ff.)

"All these are Mahāyānist incidents, and find their counterpart in the Christian Bible." Cf. *op. cit.*, I, p. 124 n. 3. We should add to them that other striking parallel in which Hsüen T'sang speaks of Buddha [S'āka (?)] as the fish giving his flesh to the hungry. *Ibid.*, p. 153.

Much more striking parallels between Christ, or his twin St. Thomas, and Shāka, or S'ālivāhaṇa (of the Serpentine Tribe), whose name might yield the meaning of Cross-bearer, have been compiled by Capt. F. Wilford in *Asiatick Researches*, X. 27-126. Wilford reaches the acme of feeling prompted by the remarkable nature of his own discoveries, when, at p. 57, he

<sup>1</sup> A reference is given for this last statement: *Travels of Fa-Hien*, p. 65.

<sup>2</sup> Sic.

<sup>3</sup> The references in this quotation are to passages of Mrs. E. A. Gordon's *World-Healers*.

writes of Shāka or S'ālivāhana." "This *Mléch'havatāra*, or superior incarnation of the deity among foreign tribes, *Rumadēsa-pati*, the lord of the country of Roum, or Rome, (because his doctrine, institutes, and laws prevail through it;) *Rōmaca nagaré*, said to reside in Rome its metropolis, (because he is revered and worshipped there with unusual magnificence;) 'Saces'wara, the lord of a sacred period, (or as I think it should be understood, after whom it is denominated), is obviously Jesus Christ; at least it appears so to me."

The era denominated after S'ālivāhana is the one beginning in A.D. 78 (or 68 in some parts of India?), an era introduced into India, says the *Agni Purāṇa* (*ibid.*, pp. 47, 54-55), at a period corresponding to the year 676 of Christ, *i.e.*, at the time when the Christian era began to get adopted in Christendom.

In February 1924, the Catholic Syrian Bishop of Kottayam showed me a Malayalam MS., some 300 years old, of which he had half a dozen copies, in the first lines of the preface of which it was stated that St. Thomas died A.D. 78.

Oh, for an Orientalist who will either refute or corroborate Wilford's findings!

How is it that so many of our Christians in Southern India bear the name of S'ālivāhana as a Christian name? In many parts of India, notably in the history of the Warangal kings and in the *Rajatarangini* of Kashmir, stories of the crucifixion are connected with S'ālivāhana or Mandavya. See Wilford's essay in *Asiatick Researches*, X. 27-126.

26. *Inter-borrowing of legends between Christians and non-Christians*.—A Muhammadan story from Covalong, in the close vicinity of Mylapore, about the finding of a box that came by sea, the impossibility of moving it, and the receding of the sea, bears a close resemblance to the story of St. Thomas' log from Ceylon, the inability of the King and his people to move it, and the story that the sea was formerly 10 or 12 miles from the present site of the Cathedral of S. Thomé. It ought to find a place in the chapter on *Inter-borrowing of legends between Christians and non-Christians* which I published lately in *The Catholic Herald of India*, January 31st—March 28th, 1923, pp. 79, 94, 110, 126, 142-143, 158-159, 174-175, 189-190, 205-206.

We owe the story to L. A. Cammiade, Esq., Presidency Magistrate, Pantheon Rd., Egmore, Madras, who, on sending it, favours us with some remarks (April 29, 1923):—

"I also enclose a brief history of the Muhammadan saint *Tamim*, whose tomb is venerated at Covelong, 18 miles south of San Thomé. You will find there further evidence of inter-borrowing of legends. The history I am sending was given me by one of my Muhammadan clerks. I have also obtained a printed pamphlet on the same subject, which I shall send you as soon as as I can get a translation.

"As you know, there are, all along the Coromandel Coast, ancient settlements of Arabs and others who now go by the names of Lubbai, Marakayar, Choolia, Rowther, etc. These people have traditions and histories which nobody has so far troubled to investigate. As the historic spirit is far stronger among them than among Indians, their traditions and old books may serve to throw considerable light on the history of Christianity on the Coromandel Coast. I would suggest that you induce the Jesuit Fathers in Madura and Tinnevely to get all information they can from the Lubbai.<sup>1</sup> I was told that there is a place in the Nanguneri Taluk in Tinnevely, which, according to tradition, is one of the early settlements of the Lubbai. I forget its name. It begins with an E. (Erradai?). Pulicat is another place where information might be available among the Lubbai."

Certainly, if the Lubbai have histories, one would expect the Christians and their Church of St. Thomas and some of the St. Thomas legends to have found a place in them. We are still in the dark for instance about the fight between Christians and Muhammadans which ended the Christians' settlement of Mylapore between 1340 and 1498 in the destruction of the place. Rather striking is the name of the Muhammadan saint of Covalong: Tamim. It sounds much like Thomas. But, the similarity of the names and of the legends ought not to move us, since we have good evidence of Persian Christian occupation at Mylapore from at least the middle of the seventh century, that occupation at that date suggesting a much earlier settlement of Christians. The story of the log is, however, heard of for the first time only in Marignolli's days (A.D. 1349).

Here is the Covalong story with as little change as possible, only a few incorrections of style having been removed.

"The burial of Hazarath Thameemul Ansari at Covelong.

"Hazarath Thameemul Ansari was Ashabi (disciple) of the Prophet Mohammad. He was buried about 700 years back at Covelong. A *durga* (tomb) was erected on his remains by Nawab Sadatullah Sahib of Arcot, about 150 years ago, and the two villages of Vedakadambadi and Perumalleoy in Chengalpet Taluq were endowed for its maintenance, which is still enjoyed by trustees.

"Covelong was then inhabited by fishermen and Cholia Muslims<sup>2</sup> only. One morning, the fishermen came across a box dancing on the waves and tried to seize it, mistaking it for a treasure trove. But, however much they tried to capture it, it would slip away from their hands, evading their grasp.

<sup>1</sup> We may succeed better by making the story public on this occasion.

<sup>2</sup> Cholia Muslims seems to mean Muslims of the Chola or Coromandel coast.

Disappointed, they informed the Cholias about the mysterious box. The latter were overjoyed when they were able to take possession very easily, the box having ceased its obstinate tendencies. They tried to lift it and remove it to a better position: but the box could not be shifted, in spite of all their physical efforts. Finally they resolved upon opening it at the very spot, and, when they did so, to their great surprise and awe, they found a corpse fresh and prepared for burial. They found a *chit*<sup>1</sup> in the cask, which said that the dead man was an inhabitant of Mecca, a disciple of the Prophet, and that, due to reasons of his own, he had ordained his family to put him in a box and throw it into the Red Sea; and it instructed the finders of the box to bury him on the spot where it halted. From the *chit* it was apparent that the box must have been floating up and down for about 500 years without being shattered and putrified.

“But the Cholias were in a great fix as to how the body could be buried on the spot, since it was in the bed of the ocean. To their great surprise the sea was found to have receded about a furlong off. Accordingly, the corpse was buried with all ceremony at its present site, where it has continued to remain since long. The Sunni Muslims, after settling in the neighbourhood of the Durga, seized, about 150 years ago, the ceremonial rites and duties connected with it from the Cholias, and enjoy them to the present day, paying a yearly tribute to the Cholias, the original finders of the box.”

Does it not look as if the Cholia Muslims were apostate Christians, who had a Church at Covalong dedicated to St. Thomas, and that the traditions of Mylapore have been perverted by them?

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*Provenance and explanation of the illustration of the S. Thomé Cross.*—The illustration shows the Cross at (Great) St. Thomas' Mount, Mylapore, found in 1547 in the foundations of what must have been a pre-Portuguese chapel or church on the top of the same mount. The Cross still exists at the Mount, and may be seen at the back of the main altar in the Church. Our picture, though not the earliest pen-sketch ever made of the cross and sent to Europe, appears however to be the earliest printed: for the engravings to be found in the oldest books on St. Thomas after the Portuguese *conquista*, such as du Jarric's *Histoire des choses plus memorables*, Vol. I (1608), and others, are evidently copied from it or from a common original. The Sassanian (old Persian) characters are said to be of the middle of the seventh century.

The illustration occurs in a MS. letter by Fr. Anthony Monserrate, S J., written from Cochin in 1579, addressed to the

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<sup>1</sup> (Letter.)

General of the Society of Jesus, and now in the possession of the Society (Goa, 33; title of letter: *Informacion de los X'pianos de S. Thome*).

The text above and below the picture is as follows :

+

La interpretacion de las letras es esta en lengua malauar.  
(*Follows the Tamil text published by us above, 10 lines.*)

(*Next*):

*l. 1.*—La declaracion destas letras em español simples me q' es esta.

*l. 2.*—Despues q' aparecio la ley de los X'pianos en el mundo de alli a 30. años a 21 del mes

*l. 3.*—de diziembre murio el apostol S. Thome en Mailapar. (q' es lugar adonde agora esta la ciudad

*l. 4.*—de S. Thome) ubo conoscim<sup>o</sup> de dios vno solo q' fue mudança de la ley y destruicion del

*l. 5.*—demonio y fue destruicion y desamparo de los Judios p'a nunca mas auer dellos misericor-

*l. 6.*—dia porq' ansi los desamparo. nascio dios de la virgen Maria estuuu en su obediencia

*l. 7.*—30. anos y este era dios sin fin. enseno a doze apostoles este dios de todas las seis

*l. 8.*—leyes. i. de todas las naciones. el discipulo deste dios vino a Maylapar con vna regla

*l. 9.*—de carpintero y vn palo p'a hazer vna iglesia o casa de rey : el Cheramperemal

*l. 10.*—q' es rey del Malauar. Choliaperemal q' es rey de Charamandel Bisnaga y Pandien q' es rey de Pandi cabo de comurim

*l. 11.*—y el rey Arichendram de Atanapuran y otro rey Catri rey de las virgines y otros muchos de diuersas naciones y setas determi-

*l. 12.*—naron todos de buena voluntad y de voluntad libre concertandose entre si sometieronse a la ley y seruicio de .S. Thome varon

*l. 13.*—sancto penitente:—Vinnno tiempo q' .S. Thome murio por mano del bramane y hizose vna cruz de sangre : todos los

*l. 14.*—q' adoran esta cruz les perdona dios rey su grande peccado del nascimiento y llegando alla ( s. donde esta dios) an de uiuir

*l. 15.*—verdad.<sup>1</sup>

*l. 16.*—Estas letras q' se hallaron en el sepulcro del glorioso .S. Thome fueron leidas y declaradas por hum bramen alqual de ay

*l. 17.*—a 21 dias se le rebento la cabeça y murio, no saben si por no se baptizar porq' fue combibado a eso o porq' toco a la

<sup>1</sup> Perhaps for: *an de uiuir verdad<sup>te</sup>* : will live truly.

*l. 18.*—piedra ensangrentada subiendo en cima del altar : fueron diuersos los juizios del juizio de dios en dar tal

*l. 19.*—muerte al bramen despues de auer declarado las letras, cosa q' nunca se pudo alcanzar ni entender.

*l. 20.*—Cuentan estos X'pianos q' desques de muerto .S. Thome qn<sup>do</sup> lo enterrauan nunca pudieron enterrar el braço sino siempre le quedaua fuera : paresce q' por ser com

*l. 21.*—el q' toco las lagas de X.' n. S<sup>r</sup> y sabido esto por el rey muguel vino con grande exercito p'a cortar el braço el qual al t'po q' lo quiso cortar se escondio y el p'si-

*l. 22.*—guio a los X'pianos grauem<sup>e</sup>.

*St. Joseph's College,*

*Darjeeling, May 6, 1923.*

SUMMARY.—The paper deals with pre-Portuguese Christianity in India. A reference to apparitions of St. Thomas on the day of his feast at the place where he truly lies, which occurs in a Latin hymn, is traced to the stories related at Rome about 1122 by one Mar John, whom one document describes as the Patriarch of the Indies, and another as an Indian Archbishop. The stories, however extravagant, seem to hail from India, i.e., from Mylapore, not from Edessa.

One of these, the opening of the sea a week before and a week after the Saint's feast, is mentioned similarly, in connection with Mylapore, by Bishop John de Marignolli (c. 1349), who visited Mylapore, and by a Flemish sailor who was in Malabar in 1502-03.

Legends about the right arm of St. Thomas at Mylapore occur in John de Mandeville (*ante* 1371), Jean Aerts of Mechlin (1481-84), Barbosa (*ante* 1516), depositions taken at Mylapore in 1531, and in a letter of Fr. A. Monserrate, S.J., (Cochin, 1579). All these legends being independent, John de Mandeville emerges from the examination somewhat rehabilitated.

Many authors treat Mar John's journey as purely mythical; W. Germann is disposed to regard the legends of Mar John as Indian, but Mar John himself as an adventurer Bishop from Mesopotamia; the present writer agrees with Yule and others in considering it as historical.

Another legend is related by Peter de Natalibus about a dry vine-shoot which, placed in the Saint's hand yearly on the eve of his feast, was taken out the next day green and bearing a bunch of grapes. Peter de Natalibus places the story at Edessa; the present writer would place it at Mylapore, where, according to de Marignolli, St. Thomas had planted a vinery, which he had sown from grapes brought from Paradise (Ceylon).

Another legend mentions a certain St. Clara, the daughter of the king of Calamina (Mylapore? Sir John de Mandeville's Calamyne), in whose honour 300 convents of Dominican Nuns had been founded in only one out of 60 Christian kingdoms of India. The writer examines in this connection the stories about Prester John of India, translates Prester John's earliest letter as we have it in Assemani, and traces in it some legends of the St. Thomas Christians of Malabar.

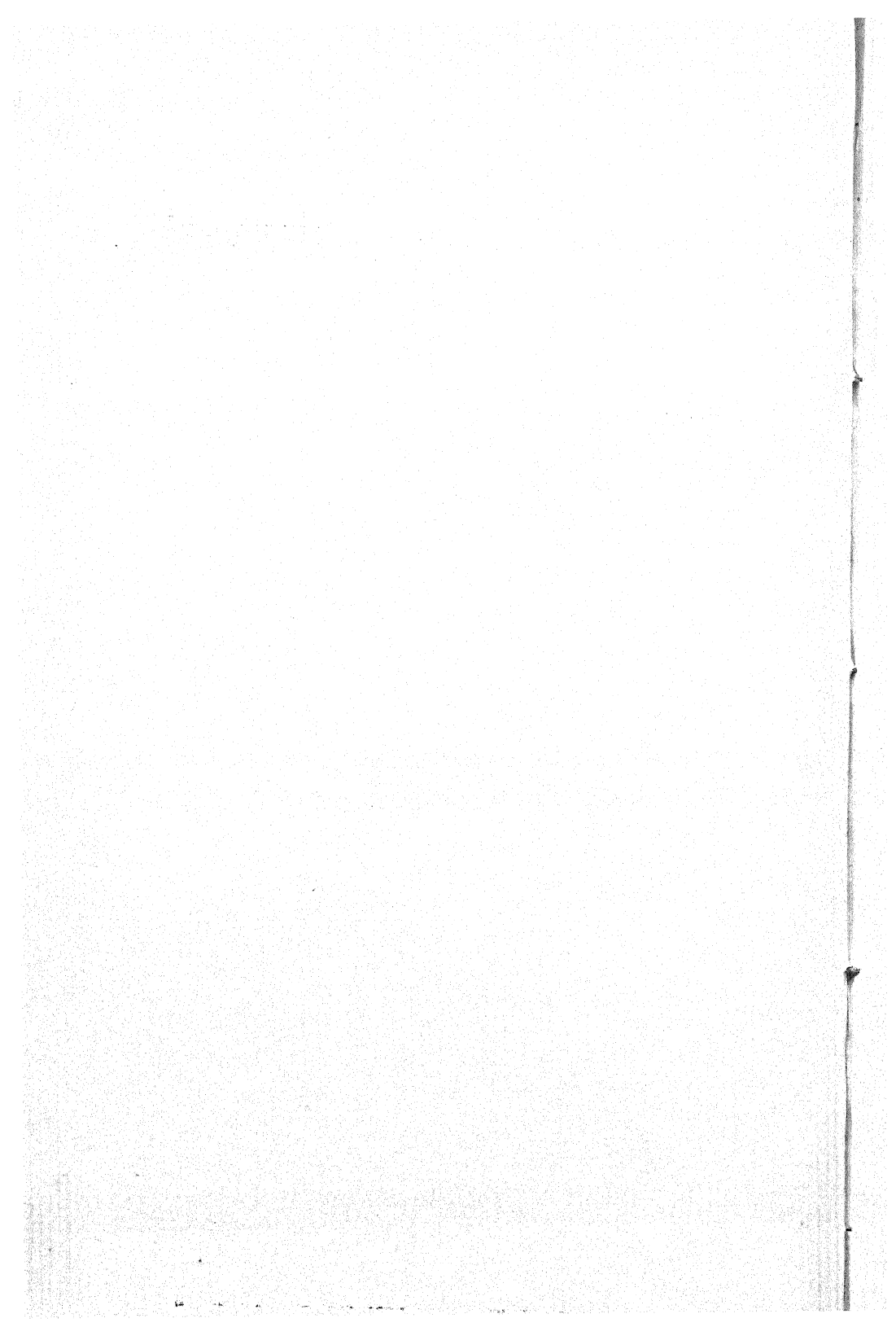
A reference in the Latin Hymn to the three kings baptized by St. Thomas in India is attributed by the writer to Mar John's journey to Rome. It recurs in later Syriac versions from Malabar, as found in the writings of Francesco Roz, S.J., Bishop of Angamale-Cranganore (about 1605), and of others; also in the spurious decipherment made by a Brahman (1561) of the Sassanian-Pahlavi inscription round the Cross at Mylapore (7th century). The 'Malavar' text of this decipherment, preserved by Fr. A. Monserrate (Cochin, 1579), is now for the first time made accessible, and an English translation is given of Monserrate's Spanish translation.

Mar John's journey to Rome was surpassed in A.D. 1287 by Mar Sauma, a Nestorian Bishop, who came from Khanbaliq (Pekin), his birthplace, *via* Bagdad and Constantinople to Rome, interviewed the King of France at Paris and the King of England in Gascony, received Holy Communion from the Pope, and returned to tell his story to King Argon of the Mongols, whose ambassador he had been.

# Numismatic Supplement for 1923.

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*[Journal and Proceedings of the Asiatic Society of Bengal.]*



# Numismatic Supplement No. XXXVII

[for 1923]

Articles 232-246.

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## NUMISMATIC SUPPLEMENT No. XXXVII.

ARTICLES 232-246.

*Continued from "Journal and Proceedings," Vol. XVIII,  
New Series, No. 9.*

### 232. SOME RARE AND UNPUBLISHED SĀSĀNIAN COINS.

#### *I. A Unique Hemidrachm of Shāpūr, son of Pāpak.*

Persis, which dealt the last blow to the Arsacids, had through the whole Parthian period held an isolated position, and is so seldom mentioned that our knowledge of its history and native princes is almost wholly due to recently found coins (see Mordtmann, in *Zeitschrift für Numism.* of Berlin, Vol. IV, 1877, p. 152 sq.; Vol. VII, 1880, p. 40 sq.; and in *Numismat. Zeitschrift* of Vienna for 1878; and Levy, in *Z.D.M.G.*, Vol. XXI for 1867), but we cannot tell whether these princes were all of one dynasty.

The earliest mention of Persis is found in the Cuneiform inscriptions narrating the conquest of Babylonia by Cyrus, the text of which is almost contemporary with the event. They give to Cyrus the title of *shar Anzan shar Pārsū* "king of Anzan (Susiana), king of Pārsū (Persis)." It is only from the time of Cyrus (B.C. 558), the founder of the Achaemenian dynasty, that Persis enters history. It also figures under the name of Pārsa in the Cuneiform inscriptions of Darius the Great at Behistūn. After the conquest by Alexander, this province became a simple satrapy, governed like the others by a satrap. At the time of the dissolution of the vast Seleucid empire, Persis revolted almost about the same time as the Parthians and gained its independence. Few dates are harder to fix from the testimony of the ancient writers than that of the Parthian revolt. Justin appears to declare for either B.C. 256 or 250, and it is to the latter date that Rawlinson inclines. A fortunate discovery of George Smith (*Assyrian Discoveries*, 1875, p. 389) has given a satisfactory solution of the question. He found a record which proved that the Parthians made use of an era of which the 144th year corresponded to the 208th of the Seleucid era, and which therefore must date from B.C. 249-48. It is probable that this is the date of the Parthian revolt.

The emblems on the coins show that Persis was always loyally Zoroastrian. At Istakhr stood the famous fire-temple of Anāhīta. It was the marriage of its priest Sāsān, with a Bāzrangik princess, Rāmbehisht, which laid the foundation

of the greatness of the house, while priestly influence, which was very strong, doubtless favoured its rise.

In the beginning of the third century of the Christian era, one of the minor kings who ruled in Persis belonged to a dynasty the name of which was probably Bāzrangik. Gōzihr, the last prince of the Bāzrangik dynasty, was overthrown by Pāpak, son or descendant of Sāsān, who became master of the district of Istakhr (Persepolis). The coins and inscriptions of his son, Ardashīr, give him the title of king. Perhaps Pāpak before his death was already lord of all Persis. His legitimate heir was his son Shāpūr for whom Pāpak is said to have asked recognition from the Arsacids; but on Pāpak's death a second son, Ardashīr, refused to acknowledge his brother and was in arms against him when Shāpūr died suddenly (see Nöldeke, *Tabari*, pp. 7 and 8).

A unique drachm (size, .80 in.; weight, 55 grs.) has been published by Cunningham (*Numismatic Chronicle*, Vol. XIII, 1893, p. 178, Plate XIII, Fig. 1) which he assigns to Ardashīr I.

The legend is:—

Obverse.—*Bagī Shahpūhrī malkā*,

Reverse.—*(bare)h bagī Pāpakī malkā*.

Consequently this drachm is of Shāpūr, son of Pāpak, and not of Ardashīr.

The hemidrachm described below is of the same type and with the same legend as above. Both these coins exhibit a style and script similar to the early binominal coins of Ardashīr I (see the *Bartholomaei Collection*, Plate XXXII, Fig. 1). It is probable that Ardashīr came to the throne of Persis in A. C. 211-212 (see Gutschmid, in *Z.D.M.G.*, Vol. XXXIV, 1880, p. 734) when he struck the binominal coins with his own full-face portrait on the obverse and, on the reverse, his father's portrait in profile (see Thomas, *Numismatic Chronicle*, 1872, No. XLV, p. 54). Therefore it is possible to assign the date A.C. 211 to the coins of Shāpūr, son of Pāpak.

Not only the coins and inscriptions of Ardashīr but also the coins of Shāpūr give Pāpak the title of king, so in all probability Pāpak before his death was already lord of all Persis. The Arsacid empire was the union of many *malkān* or feudatory princes, each of whom ruled his special province, but had to join in the general defence, and furnish money and troops to the great king, whose capital was Ctesiphon on the Tigris. These petty princes had the right to coin money, but on the condition that the legends were to be in Pahlavi and that the vassal was to take the simple title of *malkā*. Thus we find Pāpak, Shāpūr and Ardashīr, in the beginning of his reign, styled simply *malkā* (see the article of Drouin, *La Numismatique Araméenne*, etc., *Journal Asiatique*, 1889; and Zotenberg, *Tabari*, Vol. II, p. 5). On this political organization,

see Darmesteter, *Le Zend-Avesta*, Vol. III, 1893, p. xl; and *La lettre de Tansar*, in the *Journal Asiatique*, 1894.

With these introductory remarks I here introduce to the notice of students of this epoch a unique hemidrachm of Shāpūr, son of Pāpak. So far as I know the drachm published by Cunningham and this hemidrachm are the only coins known of Shāpūr, king of Persis, and of the house of Sāsān.

*Description.*

*Metal.*—Silver. *Size.*—66 in. *Weight.*—25 grs.

*Obverse.*—The bust of Shāpūr to left with Parthian helmet, with ear-flap, and fillets floating behind: the hair and beard dressed in curls. Grēnetis.

*Legend.*—Commencing behind the helmet, *Bagī Shāhpūhrī malkā*, "The divinity Shāpūr, the king,"

*Reverse.*—The bust of Pāpak to left with Parthian helmet, surmounted by a peculiar plume, and fillets floating behind: the hair and beard dressed in curls. Grēnetis.

*Legend.*—Commencing behind the helmet, *bareh bagī Pāpak(ī) malkā*, "son of the divinity Pāpak, the king." Plate I, 1.

The word *bagī* means "divinity" and corresponds to *ālāhā* of the Chaldaeo-Pahlavī and *ΘΕΟΥ* of the Greek texts of the Sāsānian trilingual inscriptions at Naqsh-e Rūstam (see Flandin et Coste, *Voyage en Perse*, Vol. IV, Plate 181), *zī ālahiā* on the coins of the Persids and *ΘΕΟΣ* of the Seleucids. *Bagī* has been taken as an adjective, whenever it occurs among the titles of the Sāsānian kings, in their inscriptions and coins; but the equivalent *ālāhā* in Chaldaeo-Pahlavī, is against its being so understood, for this latter is clearly a substantive, meaning "god." If it were an adjective, we might expect *ālāhī*, as it really means "divine." In *bagī*, the *ī* is no adjectival termination, but the vowel so frequently found at the end of Pahlavī words. *Bag* itself is the *baga* of the Persian Cuneiform inscriptions, Avestā *baga*, meaning "god" (see Haug, *Essay on Pahlavī*, p. 49). If the Sāsānian kings styled themselves *bag* "god, divinity," it is no more than the Seleucids did, when they assumed the title *θεός*. It is possible that this pretension to divinity was borrowed from Egypt by the Seleucids. Mordtmann, the well-known numismatist and savant, follows his predecessors in always translating the word *bagī* by "göttliche" (divine) even in his important memoir (see *Z.D.M.G.*, 1880, p. 6), which was published posthumously. Another well-known numismatist and Erānian scholar, Drouin, follows him in all his works and even in his last important paper (*Les Légendes des Monnaies Sassanides*, p. 9). West, the greatest authority on Pahlavī, however, translates it "divinity" in his last important

contribution on Pahlavi literature (see *Grundriss der Iranischen Philologie*, Vol. II, p. 78); and such specialists on Ērānian subjects as Nöldeke, Justi, Marquart and others invariably translate it by the word "gott" (divinity).

The word *bareh* means "son," corresponding to *barī* of the Chaldæo-Pahlavi, and *ΥΙΟΥ* of the Greek texts of the above-named inscriptions. It consists of three letters, the last of which has been for a long time the subject of discussion among savants. The phonetic value of this character has been thought to be *ī* (see Thomas, *Early Sassanian Inscriptions, Seals and Coins*, p. 20 sq.), chiefly on account of its resemblance, in form, to the Zand (Avestā) letter; but Haug has identified it with the Pahlavi *man*. (For a fuller discussion on this subject, see Hoshangji and Haug's *Zand-Pahlavi Glossary*, p. xxi.) It was reserved for Nöldeke (*Z.D.M.G.*, 1879, p. 690) to determine the phonetic value of this letter as *h*, which resembles in form the Aramaic letter. All modern specialists on Ērānian subjects are in accord with Nöldeke about the value of this letter. (For further, see Casartelli, *The Semitic Suffix Man* in the *Babylonian and Oriental Record*, May 1888; *Actes du Congrès des Orient*, Genève, 1894, section i, p. 207; and Kirste, *Das Pehlvi Suffix Man* in the *Wiener Zeitschrift*, 1889, p. 313.)

The legend on the early binominal coins of Ardashīr I has been transcribed by Nöldeke (*Z.D.M.G.*, 1879, p. 690):—

*Obverse*.—*Bagi Artakhshatr malkā*.

*Reverse*.—*bareh bagī Pāpakī malkā*; and read: *Bag Artakhshatr shāh pusi bag Pāpak shāh*. So the reading of the legend on the coins of Shāpūr should be:—*Bag Shāhpūthr shāh pusi bag Pāpak shāh*.

This was a peculiar way of writing and pronouncing in Pahlavi. A foreign word was really written, but its Persian equivalent was always pronounced in its stead. This strange proceeding was confined to a certain number of words, about a thousand. They are contained in a vocabulary still extant and called the *Sāsānian Farhang*.

## II. An Obol of Ardashīr I.

As small pieces in Sāsānian silver are extremely scarce, it is very difficult to arrive at their standard weight. But from their existing weight we can at least ascertain the approximate denomination. The coin of Ardashīr I, described below, should probably be classed as an obol ( $\frac{1}{2}$  drachm), as its weight is 11 grains. For purposes of comparison I give the other known coins of Ardashīr I, of this denomination, which have been described and illustrated. These are as follows:—

The Bartholomaei Collection (Plate I, Fig. 14); weight, not known;

Thomas (*Num. Chron.*, XII, N.S., Plate II, Fig. 9); weight, 9.5 grs.;

Mordtmann (*Z.D.M.G.*, 1854, p. 34, No. 11); weight, 8.89 grs.;

Mordtmann (*Z.D.M.G.*, 1880, p. 9, No. 12); weight, 10 grs.;

Mordtmann (*Z.D.M.G.*, 1880, p. 12, No. 35); weight, 9.26 grs.

*Description of the Obol.*

*Metal.*—Silver. *Size.*—6 in. *Weight.*—11 grs.

*Obverse.*—The bust of Ardashīr I to left with crown, having ear-flap, and surmounted by a globe: the fillets of the diadem floating behind: a moustache and plaited hair and beard: the hair of the head is divided into two parts, one falling over the right shoulder and the other behind the back. Grēnetis.

*Legend.*—Commencing behind the globe, *Mazda(ya)sn bagē Artakhshatr malkān malkā Aī(rān min)ō-chitrī min (yazdān)*, "Mazda-worshipping divinity Ardashīr, king of the kings of Ērān, of spiritual origin from the sacred beings."

*Reverse.*—The holy *pyreum* on an altar with handles and fillets: a censer on each side. Grēnetis.

*Legend.*—Commencing from the left of the fire, *Nūrā zī Artakhshatr*, "The fire of Ardashīr."

There is a small hole in the coin in front of the bust.

**Plate I, 2.**

According to Marquart (*Z.D.M.G.*, 1895, p. 670) the legend on the obverse should be read: *Mazdēzn bagē Artakhshathr* (—i) *shāhān-shāh* (—i) *Ērān kē chithrē az yazatān*. He believes that *minō* is not the Zand (Avestā) *manush* "heaven"; but the Aramaic relative pronoun *mannū* "who," which the Persians read *kē* in the same way as *az* for *min* and *shāhānshāh* for *malkān malkā*. So the translation of the legend would be "Mazda-worshipping divinity Ardashīr, king of the kings of Ērān, who is (*ke*) by origin from the sacred beings." But on a gem described by Mordtmann (*Z.D.M.G.*, Vol. XXXI, 1877, p. 594, No. 30) the variant *yazdō-chitrī* is found instead of *minō-chitrī*, which emphasizes the fact that *yazdō* and *minō*, having the same meaning of "spiritual," are therefore interchangeable. (For the amended reading of the legend on this gem, see Justi, in *Z.D.M.G.*, Vol. XLVI, 1892.) In the trilingual inscriptions of Ardashīr I at Naqsh-i Rostam (see Flandin et Coste, *Voyage en Perse*, Vol. II, Plate 181) and of Shāpur I at Naqsh-i Rājab (see Flandin et Coste, *op. cit.*, Plate 190) the equivalents *ἐξυπερβους* in Greek and *minō shīhar* in Chaldæo-Pahlavi preclude our taking any other meaning of *minō-chitrī* than "of spiritual origin."

On the reverse of the coins of the early Sāsānian kings, is a legend in six letters with the name of the king. It was read *iezdani* by De Sacy and *nuwazi* by Dorn, Thomas and Mordtmann. De Sacy translated it by "the divine," Dorn and Mordtmann by "the adorer" and Thomas by "fire-temple." It was Nöldeke (*Z.D.M.G.*, 1877, p. 148; and 1879, p. 690) who determined the true reading *nūrā zī* "the fire of." *Nūr* is the Aramaic word construed in *nūrā*; and *zī* (Aramaic) is the Semitic particle employed in Sāsānian Pahlavi to express the possessive. According to the German savant this expression should be pronounced ideographically with the *izāfat*: *ātūr-ī Artakshatr* "the fire of Ardashīr." In spite of this determination Mordtmann (*Z.D.M.G.*, 1880, p. 7) persists in his reading and translation.

### III. A Binominal Drachm of Ardashīr I.

Ardashīr I is said to have taken his son Shāpūr as partner of his throne, and this is confirmed by coins on which a youthful head appears along with that of Ardashīr. Firdausi (Mohl, *Le Livre des Rois*, Vol. II, p. 302) remarks to the effect that this partnership took place when Ardashīr was sixty-eight years of age. Legendary tradition makes Shāpūr's mother an Arsacid princess taken at the capture of Ctesiphon; but, according to a more probable account, Shāpūr was already able to bear arms in the decisive battle with Ardavān (Artabanus) in 224 (according to Nöldeke, or 227, according to Gutschmid). Nor can he have been a mere stripling when his reign began, as his prowess against Rome shows; for in Ardashīr's last years, in the reign of Maximin (236-238), the war had been renewed, and Nisibis and Carrhae (Haran), two fortresses which constantly reappear in this history, had been taken, and in 242 Shāpūr had penetrated to Antioch. (For the birth of Shāpūr, see *Firdausi*, Mohl, *Le Livre des Rois*, Vol. V, p. 268 sq.; *Tabari*, Zotenberg, Vol. II, p. 77; *Tabari*, Nöldeke, p. 27; and *Kārnāmak*, Nöldeke, p. 62.) Ardashīr died late in 241, or early in 242, and Shāpūr was probably crowned on the 20th of March, 242.

The drachm, described below, contributes numismatic testimony to this interesting historical incident—the association of Shāpūr in the government with his father, Ardashīr, during the life-time of the latter. Several of the copper coins, depicting this incident, are known; but of silver there is only a unique piece (weight, 54·5 grs.), in the British Museum, published by Thomas (*Numismatic Chronicle*, Vol. XV, O.S., p. 180, Fig. 2; and *Sassanians in Persia*, Plate I, Fig. 12) and reproduced by Mordtmann (*Z.D.M.G.*, 1854, Plate X, Fig. 6) in stamped facsimile. Unfortunately the legend on the obverse has not been properly deciphered. Thomas (in his latter

work, *op. cit.*, p. 23) describes the legend as imperfect and reads to the left, *malkān*, and to the right, *malkā*; but Mordtmann (*Z.D.M.G.*, 1880, p. 13) pronounces it, at least in the illustration, as illegible. With the help of the other piece in my Cabinet I have been able to decipher it:—

Commencing behind the bust of *Shāpūr*, (*Shah*)*pūhrī malkā (Āī)rān minō-chīl(rī)*, “*Shāpūr*, the king of *Ērān*, of spiritual origin.” The legend on the reverse is:—*Nūrā (zī) Artakhshatr*, “The fire of *Ardashīr*.”

The known copper coins of this type are unfortunately in a very bad state of preservation, consequently the legend on the obverse has not yet been read. But by a singular fate the reverse of the piece in the Bartholomaei Collection Plate I, Fig. 15) is in a good condition. The reading is:—*Nūrā zī Shāhpūtrī*, “The fire of *Shāpūr*.”

I am supported in this reading by Drouin (*Les Légendes des Monnaies Sassanides*, p. 16), who mentions another piece with the name written as *Shāhpūtrī*. These two archaic forms could be explained by the fact that these coins were struck in a distant province, where the dialect admits very often of the *t*. (For the different forms of the name *Shāpūr*, see Nöldeke, *Kārnamak*, p. 61; and Justi, *Iranisches Namenbuch*, p. 284.)

Some time about the middle of his reign, *Ardashīr* exchanged the Parthian helmet on his coins for a crown surmounted by a globe, and added also the words *minō-chītrī min yazdān* “of spiritual origin from the sacred beings” at the end of the protocol. According to Mordtmann (*Z.D.M.G.*, 1880, p. 6) the coins with the Parthian helmet were issued till 232, when this innovation was introduced. The coins of *Ardashīr* with his son *Shāpūr*, belong to the latter category. Therefore it was at some time between 232 and 241 that these coins were struck. From the style and epigraphy I am inclined to believe that the date is nearer 241 than 232, that is to say, about 238–39.

#### *Description of the Drachm.*

*Metal*.—Silver. *Size*.—1.06 in. *Weight*.—56 grs.

*Obverse*.—The bust of *Ardashīr* I to right with crown, surmounted by a globe, and fillets floating behind; the hair and beard dressed in plaits. Facing him is his son, *Shāpūr*, with Parthian helmet and fillets floating behind. Grænetis.

*Legend*.—Commencing behind the bust of *Shāpūr*, *Shah-pūhrī malkā Āīrān minō (chītrī)*, “*Shāpūr*, the king of *Ērān*, of spiritual origin.”

*Reverse*.—The holy *pyreum* on an altar with handles and fillets: a censer on each side. Grænetis.

*Legend*.—Commencing from the left of the fire, *Nūrā zī Artakhshatr*, “The fire of *Ardashīr*.” Plate I, 3.

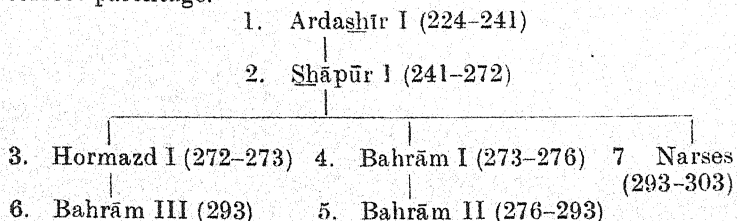
The title *malkā Āīrān* strikes us as very typical. It was

this very title, which Ardashīr I took previously to that of *malkān malkā Āīrān* "king of the kings of Ērān." We have fortunately a numismatic document in the form of the unique gold coin (weight, 131 grs.) of Ardashīr I, in the British Museum, with this title, published by Thomas, *Numismatic Chronicle*, Vol. XV, O.S., p. 180, Fig. 1) and reproduced by Mordtmann (*Z.D.M.G.*, 1854, Plate X, Fig. 5) in stamped facsimile.

#### IV. *A Drachm of Narses.*

The inscription of Narses (293-303), in eleven lines, on the rocks of the city of Shāpūr (Flandin et Coste, *Voyage en Perse*, Vol. II, Plate 45), gives his genealogy as son of Shāpūr I and grandson of Ardashīr I, whereas he is ordinarily held to have been the son of either Bahrām I or Bahrām II. Tabari (Nöldeke, p. 50; Zotenberg, Vol. II, p. 90) and Masa'ūdī (*Prairies d'Or*, Vol. II, p. 174) make him the son of Bahrām I. Mirkhond (De Sacy, p. 301) says that he was the son of Bahrām II; so also Moudjmel Altawārikh (*Journal Asiatique*, 1839, p. 38) and Hamza Isphānī (Gottwaldt, p. 37). Nöldeke (*Tabari*, p. 50) and Mordtmann (*Z.D.M.G.*, 1880, p. 45) remark that the Armenian author Sebeos is the only one who confirms this inscription. I find that this statement is also confirmed by the Arabian writer Abu Obeidah (see Maçoudi, *Prairies d'Or*, Vol. II, p. 238). For the above statement of Sebeos, see the article entitled "Essai d'une Histoire de la Dynastie des Sassanides" by Patkanian in the *Journal Asiatique*, 1866, p. 149; translated from the original Russian into French by Prud'homme.

The genealogy of the first three Bahrāms and Narses has been variously stated by different historians, but from the inscription on rocks we are now in a position to assign their correct parentage.



It is interesting to know that the first discovered coin, a drachm, of Narses, fetched the handsome price of 400 roubles in 1829, being acquired by "L'Institut des Langues Orientales de St. Petersburg" (see De Markoff, *Catalogue des Monnaies Sassanides*, etc., p. iv).

On other known coins of Narses the inscription commences behind the globe surmounting the crown, but here is a specimen in which the legend commences in front of the bust.

*Description of the Drachm.*

*Metal.*—Silver. *Size.*—1 in. *Weight.*—52 grs.

*Obverse.*—The bust of Narses to right wearing a crown ornamented with foliated branches, projecting from three different points in the circlet; with fillets floating behind and surmounted by the traditional globe. The hair is dressed in plaits; a moustache and a short curly beard terminating in a pendant jewel: an ear-ring and the bust draped. Grēnetis.

*Legend.*—Commencing in front of the bust, (*Mazdayasn*) *bagi Narsehī malkān malkā Aīrān minō-chitri min yāzdān*, "Mazda-worshipping divinity Narses, king of the kings of Ērān, of spiritual origin from the sacred beings."

*Reverse.*—The fire altar supported, on the left side, by the king wearing crown and globe as on the obverse, and to the right, by the priest with the ordinary coronet; both have swords inclined towards the altar and are facing the fire. To the left of the fire, the *frōhar* symbol; and to the right, the *taurus* symbol. Grēnetis. No legend. **Plate I, 4.**

A portion of the coin is broken in front of the bust.

*V. Another Drachm of the rare type of Shāpūr II.*

In describing a similar type of drachm of this king (*Numismatic Supplement*, XXX, p. 262) I remarked that while the Sāsānian coins follow more or less fixed types, they exhibit a pronounced variety in legends, the study of which is a matter of continual interest. This remark is further substantiated by the drachm described below.

Hormazd II (303–310) was the first to take the epithet *vōhīā* "excellent" on his coins. His son, Shāpūr II (310–379), and grandson, Shāpūr III (383–388), took it only in their inscriptions at Tāq-i Bostān (see De Sacy, *Mémoires*. 1793, p. 5; and Flandin et Coste, *Voyage en Perse*, Vol. IV, Plate 6). But there is a solitary published exception in the case of a drachm of Shāpūr II, with this epithet, described by Mordtmann (*Z.D.M.G.*, 1880, p. 159, No. 554). Through the courtesy of Sir John Marshall, Director-General of Archaeology in India, I was able to examine in Bombay the Sāsānian coins in the Lahore Museum, among which I found a drachm of Shāpūr II exactly similar in type and legend to the one described by Mordtmann. The coins of this king, apart from sub-varieties, are of three main types. The above two coins are of the first type, having the fire-altar with two attendants, but without the bust of *frōhar* issuing from the fire. The drachm, which is the subject of this article, is of the third type, having the fire-altar similar to that depicted on the coins of Ardashīr I. So far as I know this is the only coin of the third type bearing the epithet *vōhīā* "excellent."

*Description of the Drachm.*

*Metal.*—Silver. *Size.*—9 in. *Weight.*—64 grs.

*Obverse.*—The bust of *Shāpūr II* to right, wearing a mural crown with three points embattled, surmounted by the traditional globe, with the fillets of the diadem floating behind the head. The hair is brought back and arranged in flowing curls: a moustache and a short curly beard tied at the end with a jewelled pendant: an ear-ring and bust draped. Grēnetis.

*Legend.*—Commencing behind the globe, *Mazdayasn vōhā Shahpūhrī malkān malkā Āirān*, "Mazda-worshipping excellent *Shāpūr*, king of the kings of *Ērān*."

*Reverse.*—The holy *pyreum* on an altar with handles and fillets: a censer on each side. Grēnetis.

*Legend.*—Commencing from the right, *Nūrā zī Shahpūhrī* "The fire of *Shāpūr*." **Plate I, 5.**

*VI. A new Portrait of Shāpūr II.*

The drachm described below exhibits a portrait of *Shāpūr II* differing from those hitherto known to us. By the test of the form of the crown, the style, the epigraphy and the legend itself the coin can safely be assigned to this king.

*Description of the Drachm.*

*Metal.*—Silver. *Size.*—1 in. *Weight.*—56·5 grs.

*Obverse.*—The bust of *Shāpūr II* to left wearing his usual mural crown, surmounted by the globe, with the fillets of the diadem floating behind. The hair is arranged behind in flowing curls; a moustache and a short curly beard tied at the point with a pendant jewel: an ear-ring and bust draped. Grēnetis.

*Legend.*—Commencing behind the crown, *Mazdayasn bagī Shāhpūhrī*, "Mazda-worshipping divinity *Shāpūr*."

*Reverse.*—The fire-altar adorned with bands, having the bust of *frōhār* issuing from the flames. The supporters (coarsely defined) are facing the altar, with swords at guard. Grēnetis.

No legend. **Plate I, 6.**

*VII. A New Sāsānian Mint.*

(Not illustrated.)

A drachm of *Yezdegerd I* (399–420) in the Bartholomaei Collection (Plate XI, Fig. 17) bears the mint-monogram KVN RIU. In the description of the coin *Mordtmann* (*Z.D.M.G.*, 1880, p. 90, No. 389) pronounces this monogram to be unintelligible, though the reproduction is quite clear.

Another mint monogram RIU, which is the second part of the monogram under discussion, first appeared on the coins during the reign of Firōz I (459-484) and then is frequently seen on the coins of his successors till 629.

Nöldeke (*Z.D.M.G.*, 1877, p. 150; and 1879, p. 141) considers it to represent Rēw-Ardashīr.

Mordtmann (*Z.D.M.G.*, 1879, p. 120, No. 21) identifies it as representing Raī (Rhages), in the vicinity of the modern Taharān, and compares it with the mint راي, Ar Raī, of the Khalifs on their dirhams.

De Morgan (*Revue Numismatique*, 1913, p. 490, § 134) considers this identification as quite acceptable.

The Arabs preserved this mint, as the monogram RIU is found on their drachms in the years A.H. 35 and 43.

ري Raī was one of the greatest and most celebrated cities of ancient Ērān. It is the 'Payā' of the Greeks. Various kings have been mentioned by different authors as founders of this city. The latest Sāsānian founder was Firōz I (459-484), son of Yezdegerd II (438-457), who named it رام فیروز, Rām-Firōz. There are still remains visible at Raī, but it is not certain whether they are those of the famous Rhages or not. That they are those of the Arabian Raī there can be very little doubt; but whether the latter occupied precisely the same site as the Parthian and the Achaemenian Rhages is not certain.

In describing another rare mint-monogram KVN BBA (*Numismatic Supplement*, XXX, p. 256 sq.), I explained the meaning of the word *kavan* as "royal." It was at the time doubtful whether this word was applied as an honorary epithet to the city represented by the monogram BBA, or whether KVN BBA represented another city. Now it is possible to believe that *kavan* was an honorific epithet, and that it was applied to the two cities represented by the monograms BBA and RIU.

#### VIII. A Drachm of Bahrām Gōr.

It is curious to note that Thomas (*Sassanians in Persia*, p. 77 sq., Plate VII, Fig. 10) has been led astray, by a legend engraved evidently by an ignorant die-sinker, into supposing a drachm of Bahrām V Gōr (320-438) to be one of Bahrām VI Chōbīn (590-591). All the known coins of the latter are exact copies of those of Hormazd IV (579-590) and are of his first regnal year, displaying the indication of mint cities. Bahrām who revolted on the death of Hormazd IV in the late summer of 590, was defeated by Khusrau II (590-628) in a decisive battle near the Zāb in the summer of 591. (For the history of this rebel, see Nöldeke, *Tabari*, p. 474 sq.)

On the piece described by Thomas, the name of the king is *Varahrān*, written inversely, followed by three letters written in the direct way, which he reads *chūp* taking them to be also inverted. Hence his mistake. But these letters should read *mal(kā)*. It is evident on the face of it that this coin is of Bahrām V, from the style, the epigraphy, from the head of the king appearing on the upper part of the altar and from the absence of the date. In support of my statements I would mention that Mordtmann (*Z.D.M.G.*, 1880, p. 98, No. 442) as well as Drouin (*Les Légendes des Monnaies Sassanides*, p. 45) attribute it to Bahrām V.

Five additional specimens in Col. Guthrie's Collection are mentioned by Thomas, who remarks that it is important to note that none of these coins are from the *same* dies; each has a slightly varying bust of the king, and an independent rendering of the legend—which is ordinarily even less definite than that of Mr. Stewart's specimen. Col. Guthrie's five coins were found at Kūlū, in the Pānjab, by Major Hay.

Another specimen is in the Linéwitch Collection (see Tiesenhausen, *Monnaies Orientales de M. Linéwitch*, p. 3) and four more are in my cabinet,

In all my specimens the whole obverse legend is in inverted writing: *Varahrān mal(kā)*. This additional testimony lends support to my statement that the coin published by Thomas is of Bahrām V and not of Bahrām VI, and that his reading of *Varahrān Chūp* is not tenable, the correct reading should be *Varahrān mal(kā)*.

*Description of the Drachm.*

*Metal.*—Silver. *Size.*—1·15 in. *Weight.*—62·5 grs.

*Obverse.*—The bust of Bahrām V to right, wearing a crown surmounted by a crescent and globe, with the fillets of the diadem floating behind. The hair is brought back and arranged in a mass of curls; a moustache and a short curly beard terminating in a pendant jewel, from which two cross-bars project: an ear-ring and a necklace of pearls: bust draped. Grēnetis.

*Legend.*—Behind the crown, a few illegible letters. Commencing in front of the crown, in inverted writing, *Varahrān mal(kā)* "Bahrām, the king."

*Reverse.*—The fire-altar, adorned with bands, having the head of the king inserted in the upper section the pedestal, immediately below the fire, in the centre of the flames of which appear the crescent and globe of his tiara. On both sides is a figure of the king with sword raised and facing the altar. Grēnetis.

Strokes instead of the legend and mint-monogram.  
Plate I, 7.

## IX. Another Drachm of Bahrām Gōr.

Two other coins of Bahrām Gōr have been wrongly ascribed to Bahrām Chōbīn by Thomas (*Sassanians in Persia*, p. 81), the one in the possession of Col. Guthrie and the other in the Bartholomaei Collection (Plate XII, Fig. 16), though the latter has been correctly attributed in the Catalogue of that Collection. No reason has been assigned save the similarity of the outline of the design on the coin with the legend in inverted writing just described. The two coins mentioned above and the one described below are much better in execution and design than the coin just described. Not only do these three coins present similar legends but also peculiarities similar to the coins of Bahrām V. There is not the slightest reason whatsoever to assign them to any other king. In describing the coin in the Bartholomaei Collection Mordtmann (*Z.D.M.G.*, 1880, p. 97, No. 438) also attributes it to Bahrām V as had been already done by the Russian soldier-savant.

*Description of the Drachm.*

*Metal.*—Silver. *Size.*—1.25 in. *Weight.*—64 grs.

*Obverse.*—The bust of Bahrām V to right, having a crown surmounted by a crescent and globe, with the fillets of the diadem floating behind. The hair is brought back and arranged in flowing curls: a moustache and a short curly beard terminating in a pendant jewel from which two cross-bars project: bust draped. Grēnetis.

*Legend.*—Commencing behind the crescent, *Mazdayasn bagī rāmshah(rī) Varahrān malkān malkā*, "Mazda-worshipping divinity *rāmshatrī* Bahrām, king of the kings."

*Reverse.*—The fire-altar adorned with bands, having the head of the king inserted in the upper section of the pedestal, immediately below the fire, in the centre of the flames of which appear the crescent and globe of his tiarā. On both sides is a figure of the king with sword raised and facing the altar. Grēnetis.

*Legend.*—To the left, *Varahrān*; and to the right, the mint-monogram in three letters. **Plate I, 8.**

In describing the coin in the Bartholomaei Collection (Plate XII, Fig. 16) Thomas (*op. cit.*) reads the mint-monogram PRI, but Mordtmann (*op. cit.*) reads it MR. Thomas is doubtful about his reading, perhaps chiefly owing to the first letter not being properly formed. From my specimen as well as from that in the Bartholomaei Collection I have not been able to fix upon any definite reading of the first letter. The second letter is R and the third is I.

*Rāmshatrī* is a compound of *rām* "delight, happiness" (Avestā *rām*) and *shatrī* "a country, a realm" (old Persian

*khshathra*), that is, *rām-i shatrī* for *rām-i khshathra* meaning "the delight of the realm" (Justi, *Iranisches Namenbuch*, pp. 258 and 500). Drouin (*Les Légendes des Monnaies Sassanides*, p. 31) translates it by "the prosperity of the empire."

This epithet is taken only by Yezdegerd I (399-420) and Bahrām V (420-438) on their coins. On a drachm of Yezdegerd II (438-457) Vincent Smith (*Indian Museum Catalogue*, Vol. I, p. 226) reads this epithet. As this coin is not illustrated I secured casts of it through the courtesy of Sir John Marshall; and I have no hesitation in saying that the words are *malkān malkā* and not the epithet *rāmshatrī*. On the reverse of this coin he reads the regnal year *nūdah* "nineteen" but it is the word *navakī* "the adorer," generally found on the reverse of the coins of this king. Although there were some exceptions during the reign of Firōz I (459-484), the usage of marking the regnal year on the coins was not established till the reign of Jāmāsp (497-499) in 497.

#### X. *A unique One-eighth of a Drachm of Jāmāsp.*

To arrive at the subdivisions of the Sāsānian drachm is very difficult, considering the scarcity and the worn state of the small pieces. The smaller the piece the more disturbing a factor wear becomes in our attempts to ascertain the normal weight. From the recorded weights of pieces smaller than the hemi-drachm it will be seen that the following denominations are in existence. The weight of the obol ( $\frac{1}{8}$  drachm) ranges from 8.33 to 11 grains; the  $\frac{1}{4}$  drachm from 6.33 to 8 grains and the hemi-obol ( $\frac{1}{16}$  drachm) from 4.30 to 5.50 grains. Mordtmann (*Z.D.M.G.*, 1880, p. 149) also suspected the existence of the  $\frac{1}{8}$  drachm, remarking at the same time that this supposition was based upon insufficient evidence to make it more than a probability.

To get a standard from known coins is difficult, for recorded specimens are in every kind of condition. How often can we assert that a coin is in mint condition? Take a good specimen of any coin and almost always we shall find wear or clipping or sweating or boring. This means that we can very seldom know how far the actual coin is below the theoretical standard. Sometimes, on the other hand, the weight is higher than anything we are prepared to expect. But these are freak coins and they are by no means common. The weights of coins, cut from the bar by hand, never pretended to be more than approximate. It is unreasonable to expect agreement to a grain and the close approximation to an assumed standard is very remarkable, considering the conditions. Attempts were made at exactitude, but I do not believe that exactitude to a grain was ever obtained. The appliances available were scarcely delicate enough to admit of perfect exactitude in weighing,

so I believe that much reliance was placed on the principle of averages. The intention was not that coins should be struck of such and such a weight, but that so many coins should be struck out of such and such a quantity of metal.

The known coins of Jāmāsp (497-499) are all drachms. The small piece of this king, described below, weighs only seven grains and is in a very good state of preservation. From the weight it could be classed as one-eighth of a drachm. Coins of denominations smaller than the hemidrachm are known up to the reign of Firōz I (459-484), but none after that period. The piece described below is unique in its way, being the last known small silver piece struck by the Sāsānians and also the only known small piece of Jāmāsp.

On all his coins, Jāmāsp is represented with a youth, who tends him a crown. The historians do not make any mention of this particular person. The name of this king on coins is generally written *Zām*; but on a drachm in the Bartholomaei Collection (Plate XVIII, Fig. 8) and on others described by Mordtmann (*Z.D.M.G.*, 1865, p. 440, No. 100; and 1880, p. 109) the name is written in full *Zāmāsp*. Drouin (*Les Légendes des Monnaies Sassanides*, p. 39) seems to believe erroneously that this reading should be *Zām af(zūt)*. Thomas (*Sassanians in Persia*, p. 66 sq.) attributes the coins of Jāmāsp wrongly to Hormazd III (457-459) and Rapson (*J.R.A.S.*, 1904, p. 679, fig. 10 of the Plate) assigns a drachm to Jāmāsp, which in reality is one of Kobād I (488-497 and 499-531). Vincent Smith (*Indian Museum Catalogue*, Vol. I, p. 226) assigns erroneously a drachm of Jāmāsp to Firōz I (459-484).

#### *Description of the $\frac{1}{8}$ Drachm.*

*Metal.*—Silver. *Size.*— $\cdot 45$  in. *Weight.*—7 grs.

*Obverse.*—The bust of Jāmāsp to right with crown, having a smaller crescent and globe in the centre surmounted by a larger crescent and globe. The hair is brought back and arranged in flowing curls, with the fillets of the diadem floating behind. Facing him is the bust of a youth with crown surmounted by a globe, who tends him a crown. Grēnetis.

*Legend.*—Behind the crown, *Zām*.

*Reverse.*—The fire-altar, adorned with bands, having the king on both sides facing the altar: on the right of the fire, a crescent, and on the left, a star. Grēnetis.

*Legend.*—Left, the date *ayō(kī)*, "one"; and right, the mint-monogram AS. Plate I, 9.

Two mint-monograms AS and ASP make their first appearance simultaneously during the reign of Bahrām IV (388-399) and both cease to appear during the reign of Khusrāu II (590-628), in 626, after figuring on coins for forty-five different years. The question is whether these monograms represent

the same place or are distinct indications for different mints. Both these monograms have been considered as one by Mordtmann (*Z.D.M.G.*, 1854, p. 13, No. 11; 1865, p. 398, No. 4; and 1879, p. 115, No. 4; p. 125, No. 50); and he has proposed the reading ASpahān. In the opinion of De Morgan (*Revue Numismatique*, 1913, p. 162, § 2) there is no strong reason for assimilating AS with ASP. He (p. 164) interprets them :— AS for ASfābūr and ASP for ASPahān (Ispahān).

اسفنبور Asfanabar is one of the seven towns of Irāk, known as the towns of Kesrā; its ancient name was probably اسفابور Asfābūr (see Barbier de Meynard, *Dictionnaire Geographique, Historique et Littéraire de la Perse*, etc., p. 34).

It possesses a grand royal portico, at present in ruins. It is rational to admit that this town having an آبران āvān had at the same time a mint.

#### XI. A rare type of Drachm of Ardashīr III.

Khusrau II (590–628) dispensed with the traditional globe surmounting the crown, and adopted a peculiar form of winged head-dress, which continued in use, with only two exceptions, to the end of the dynasty, and was copied by the Ispahbeds of Tabaristān and the Arab Governors of Persia, down to the closing years of the seventh century of the Christian era. But his son, Kobād II (628), surmounted his crown with a crescent and globe instead of the two wings; and this style was adopted by his son Ardashīr III (628–630) in his first year and during part of his second, after which the head-dress of Khusrau II was again adopted. Only one coin of the early type of Ardashīr III of the first year has been published (see Thomas, *Sassanians in Persia*, Plate VII, Fig. 2), but none of the second. This coin bears the mint-monogram MR.

I have in my cabinet 55 drachms of this rare type, 20 of the first year and 35 of the second.

For illustration I have selected only two specimens, one of the first year and one of the second.

All coins of Ardashīr III have the legend *Artakhshatr ajzūn*, “Long live Ardashīr” and are dated the year *ayōkī*, “one” and *talīn*, “two,” with the indication of the city of issue. Although the name of the king was correctly read so far back as 1854 by Mordtmann (*Z.D.M.G.*, Vol. VIII, p. 142) and in 1858 by Dorn (*Mélanges Asiatiques*, Vol. III, October, 1858, p. 463), it is surprising to find Thomas (*Sassanians in Persia*, p. 92, Plate VII, Figs 2, 3 and 4) reading it *Autahshat*; Drouin (*Les Légendes des Monnaies Sassanides*, p. 53) has also given the correct reading.

This prince was seven years of age at the death of his father and reigned under the tutelage of Mihr Ādar Gūshnasp

from September, 628, to the 27th of April, 630. With the consent of Heraclius, Shahrbarāz (Σαπβάρος) murdered the young king and usurped the throne, to fall a victim to the envy of the peers and the spirit of legitimism on the 9th of June, 630.

*Description of the Drachms.*

*Metal.*—Silver. *Size.*—A: 1·25; B: 1·27. *Weight.*—A: 61·5 grs.; B: 61·5 grs.

*Obverse.*—The bust of Ardashīr III to right, with crown surmounted by a crescent and globe. The hair is brought back and arranged in flowing curls: without moustache and beard: an ear-ring of a large pendant pearl, a pearl necklace having three large pendant pearls, and two strings of pearls reaching below the bust: the dress adorned with a crescent and star on each shoulder. In the field over both shoulders floats a fillet; a crescent over the left shoulder near the chin. Behind the crown is a star, and in front, a crescent and star. In the margin outside the grēnetis are set three crescents and stars, to the left, right and at the bottom.

*Legend.*—Commencing in front of the crown, *Artakhshatr*, "Ardashīr"; and commencing behind the crown *afzūn*, "long live."

*Reverse.*—The fire-altar adorned with bands: two personages facing front on both sides, wearing tiaras, each surmounted by a crescent and a floating fillet: both hands resting on their swords. In the field to the left of the fire, a star; to the right, a crescent; a dot on each side of the upper base of the altar. In the margin outside the grēnetis are set four crescents and stars.

*Legend.*—To the left, the date:—A: *ayōkī*, "one"; B: *talīn*, "two"; and to the right, the mint-monogram:—A: AT; B: DA. A: Plate I, 10; B: Plate II, 1.

25th April, 1921.

FURDOONJEE D. J. PARUCK.


233. UNPUBLISHED MUGHAL COINS

*I. An Ujjain Muhar of Akbar.*

The Ujjain mint is not known to have issued gold coins during the time of Akbar. In his introductory mint notes (*Punjab Museum Catalogue*, Vol. II, p. xxxi), Mr. Whitehead says with reference to this mint that "no gold coins of Akbar have been found." But now with the find of the muhar described below the status of this mint can be raised to that of a gold issuing mint of Akbar.

*Metal.*—*Al.* *Mint.*—Ujjain. *Year.*—988 A.H. *Weight.*—187 grs. *Size.*—7 (square).

*Obverse.*

In diamond formed by elongating some of the letters in the marginal legends, the Kalima. Mark 

*Margins.*

بصدق ابی بکر	بعدل عمر
بجیای عثمان	بعلم علی ۹۸۸

*Reverse*

خلد الله تعا ملكه  
محمد اکبر بادشاه  
جلال الدین غاز  
ضرب اچین

Plate II, 2.

II. *A Burhānpūr Muhar of Jahāngīr.*

Jahāngīr issued from the Burhānpūr mint rupees bearing a rare couplet; but no similar muhar has hitherto been known. (See Mr. Whitehead, *op. cit.*, p. liv.) The muhar described below fills this gap.

*Metal.*—A. *Mint.*—Burhānpūr. *Weight.*—169 grs. *Size.*—7.

*Obverse.*—On flowered field.

دین پناه  
شاه  
برهانپور  
شهر  
سکه زد در

*Reverse.*—On flowered field.

بادشاه  
اکبر  
نگیر این  
چهار  
نور الدین  
شاه

Plate II, 3.

III. *A Ten-rupee Piece of Sūrat.*

Hitherto, in the silver currency of the Mughals, no coin has been known intermediate in size between the double-rupee and the gigantic piece at Dresden (B.M.C., Intro., lxxxviii). A most interesting novelty, therefore, is the ten-rupee piece described below which has recently come into my possession.

*Metal.*—A. *Mint.*—Sūrat. *Year.*—A.H. 1185; R.Y. 6. *Weight.*—1,788 grs. *Size.*—Dia. 1.78; thick .28

*Obverse.*

۱۱۸۵  
شاه عالم  
بادشاه غاز  
سکه مبار

*Reverse.*

مانوس  
میمنت  
سنه ۶ جلوس  
ضرب  
سور

A Flower in س of جلوس

Plate II, 4.

NOTE.—In the Plate the obverse and reverse of this coin have been transposed.

IV. *New Mughal Rupees.*

‘Ālamgir II, alone of the Mughal Emperors of India, is known to have taken the *laqab* of ‘Azīzu-d-dīn on coins, but here are two rupees of Shāh ‘Ālam II bearing this *laqab*. The legends are also otherwise unusual. The obverse one appears to be mainly a reversion to that adopted by Jahāndār Shāh. Both these coins are illustrated as they bear legends which are complementary to each other.

*Metal.*—R. *Mint.*—Shāhjahanābād. *Year.*—1181.  
*Weight.*—A, 174 grs.; B, 174·5 grs. *Size.*—A, ·935; B, ·875.

*Obverse.*

شاه عالم غاز بادشاه  
 عزیز الدین  
 سکه ۱۱۸۱  
 بان مہرو مہا مبارک

*Reverse.*

کد کویت  
 چہ  
 دارالخلافہ شان داد  
 ضر  
 جلوس تمہینت مانوس  
 سکہ  
 ۱۱۸۱

The top line invites study.

Plate II, 5 (A); 6 (B).

The tentative reading of the couplet is :

سکہ مبارک [ممچو نا] بان مہرو مہا شاه عالم عزیز الدین غازی بادشاه

“The blessed coin is like the shining Sun and Moon.

[The coin of] Shāh ‘Ālam ‘Azīzu-d-dīn, champion of the faith, the Emperor.”

V. *Unpublished Silver Half-Annas.*

The later Mughals in their monetary dealings with the South appear to have imitated its currency. This is evidenced from their minute gold coins and further supported by the silver half-anna pieces described below. These coins number one hundred and thirty-three and are of five different kings: Muhammad Shāh, Aḥmad Shāh, ‘Ālamgir II, Shāh ‘Ālam II and Akbar II. Unfortunately the dies are too big for the flans of these minute coins, consequently several specimens have had to be put together to reconstruct the legends. Only three mints have been found. But there are different arrangements of the legends which suggest that the coins may have been struck in different places.

The three mints are: Khujistā Bunyād, Haidarābād and Aḏābād. It is curious to note that خجستہ بناد is written بناد خجستہ. Codrington in his “Muselman” Numismatics,”

p. 132, quotes the mint *اعز آباد* A'zābād from Tyehsen but does not indicate its situation. Now I think we are in a position to assign it at least to Southern India, if not to indicate its exact position on the map

These coins were found at Hyderābād (Deccan). They vary in size from .25 to .32 inch and range in weight from 4.5 to 5 grains.

For illustration only eight specimens have been selected representing the different types.

1. *Obverse.*

۶۰ \* ۵۵۵۵

شا

*Reverse.*

بنیاد

\*

خجست

۳۰

This legend is reconstructed from four different specimens.

Plate II, 7.

2. *Obverse.*

۵۵۵۵

شا

*Reverse.*

۱۳ شا هـ

Plate II, 8.

3. *Obverse.*

۱۴ ۵۵۵۵۱

*Reverse.*

۲ شا هـ

4. *Obverse.*

۵۵۵۵

*Reverse.*

۲۰ شا هـ

5. *Obverse.*

۱۴ ۵۵۵۵ ۱۱

*Reverse.*

شا هـ

6. *Obverse.*

۱۱۶۱

احمد

*Reverse.*

احد شا هـ

سند

From four specimens.

Plate II, 9.

7. *Obverse.*

عالم کیر  
۱۱۷۱  
سنه

*Reverse.*

بادشاه  
غاز

From five specimens.

Plate II, 10.

Other dates are ۱۱۷۲ and ۱۱۷۳.

8. *Obverse.*

عالم

*Reverse.*

کیر

9. *Obverse.*

عالم با

*Reverse.*

ضرب  
حیدر [آباد]

Plate II, 11.

10. *Obverse.*

عالم  
سنه  
۱۲۱

*Reverse.*

۴۶  
سنه  
ضرب  
اعتراف [باد]

From two specimens.

Plate II, 12.

NOTE.—In the Plate the obverse and reverse of this and No. 9 coin have been transposed.

11. *Obverse.*

شاه عا  
۱۱۷۵

*Reverse.*

شاه  
۲

Plate II, 13.

12. *Obverse.*

شاه عالم

*Reverse.*

جلوس  
سنه

From three specimens.

13. *Obverse.*

عالم  
س

*Reverse.*

۲۴  
سنه  
ب

14. *Obverse.*

محمد اکبر شاہ

*Reverse.*

حیدر [راباد]  
۸  
تمیخت  
مانوس  
جلوس  
سنه

From seven specimens.

Plate II, 14.

12th May, 1921.

FURDOONJEE D. J. PARUCK.

NOTE.—All the coins described in this article are in Mr. Paruck's collection.—EDITOR.

#### 234. THE COINS OF THE BAHMANI KINGS OF KULBARGA.

The following is an attempt to collect in one paper all available information regarding the known monetary issues of the Bahmani Kings of Kulbarga. The list had its origin in a previous one drawn up by Mr. C. J. Brown who, while compiling it, had the advantage of inspecting personally the fine collection of the late Mr. Framjee Jamasjee Thanawala. The list has been revised and extended by me; and I now publish it in the hope that numismatists in India will assist by adding, in notes in subsequent issues of the Numismatic Supplement, information they have available of coins not included in the present list. The information so obtained will prove useful in the compilation, at some future time, of a full illustrated history of the coinage of the dynasty.

In addition to the catalogue of coins a bibliography of the coinage is appended. This, with the exception of the omission of auction sale catalogues is, I believe, exhaustive of the literature bearing on the subject.

I. *Nāṣiru-d-dīn Isma'īl Shāh.*

A.H. 748.

Copper.

Obverse.

Reverse.

1. الد نیا  
ناصر  
والدين

ابو الفتح  
اسماعيل شاه

Weight, 58 grs., cf. Rodgers, J.A.S.B., 1895, and Codrington, pl. 17, fig. 1.

2. سلطان نا  
صر الدنيا والد  
الله .....

In a double circle.

شاه  
اسماعيل

Marginal legend illegible.

Weight, 53 grs., cf. Codrington, No. 2.

II. *'Alāu-d-dīn Bahman Shāh I.*

(Ḥasan Gāngū.)

A.H. 748-760

Silver.

Obverse.

Reverse.

3. السلطان الاعظم  
علا الدنيا والدين  
ابو المظفر بن شاه  
السلطان

In a square inscribed in a circle: top and right side of square consisting of two lines, lower side a single line and left side missing: in top and right segments, 3 dots: date in lower segment.

سكندر الثاني  
يمين الخلافة ناصر  
امير المؤمنين

Date.

Marginal legend.

..... بعصرت احساباد .....

Weight, about 170 grs.

Dates known:—A.H. 757, Thanawala Collection.

A.H. 758 (٧٥٨ and ٧٥٩), Collection H. M.

Whittell.

A.H. 759, Thanawala Collection.

A.H. 760, cf. Whittell, J.A.S.B., 1918.

4. السلطان  
الاعظم علاء الدین  
نیا والدین
- ابوالمظفر  
بہمن شاہ  
السلطان

Size 1. *Weight*, 26 grs., Codrington, pl. 17, fig. 2.  
Size 2. *Weight*, 15 grs., Codrington.

5. علا الدین  
والدین
- Copper.*  
شاہ  
بہمن  
السلطان

Size 1. *Weight*, 27 grs., Codrington, pl. 17, fig. 4.  
Size 2. *Weight*, 15 grs., Thanawala Collection.

III. *Muhammad Shāh I. (bin Bahman Shāh).*

A.H. 760-777.

- Obverse.*  
6. سلطان  
العبد والبر  
الحاکم ملکہ رسول  
الرحمن
- Gold.*  
*Reverse.*  
In a circle.  
بہمنی  
حسن  
محمد

Margin :—

ضرب هذا الدينار في حضرت احسنا باد  
سنة ثلث و ستين و سبعماية

*Weight*, 197.5 grs., Brit. Mus. from Da Cunha Coll., cf. Gibbs Num. Chr., 1885.

7. In square area.

سلطان  
العبد والبر  
ابوالمظفر

In square area.

محمد شاہ  
السلطان ابن  
السلطان

Date.

*Weight*, about 170 grs.

Dates known :—A.H. 763, Brit. Mus. from Da Cunha Coll.  
A.H. 775, Thanawala Coll., cf. Gibbs  
Num. Chr., 1885, No. 2.  
A.H. 776, White King Coll.

*Silver.*

8. As on No. 6. In a square in a circle :

ابو المظفر  
محمد شاه بن  
يحيى شاه السلطان

Margins :—

left ضرب

top بعضرت

right احسن باد

lower Date.

*Weight*, about 170 grs.

Dates known :— A.H. 760 to 762, 765, 771, 772, 774 to 777.

9. بناه ابو المظفر  
دين الله محمد شاه

*Size 1. Weight*, 24 grs. *Size 55*, cf. Codrington, pl. 17, fig. 5.

*Size 2. Weight*, 16 grs. *Size 45*, British Museum.

*Copper.*

10. المويد In a circle.

بنصر الله بمهناشاه  
ابو المظفر محمد شاه

Margin :—

.... سبعين ....

*Weight*, 77 grs., British Museum.

11. المويد ابو المظفر  
بنصر الله محمد شاه

*Weight*, about 55 grs., Codrington, pl. 17, fig. 7.

12. ابو المظفر بن بهمن  
محمد شاه شاه السلطان

*Weight*, about 55 grs.

13. As above. بهمن  
بن  
السلطان

*Weight*, 45 grs., British Museum.

14. In a circle. In a circle.

الاله

شاه

عبد

محمد

Weight, 37 grs. } Coll. H. M. Whittell  
Weight, 32 grs. }

IV. *Mujāhid Shāh (bin Muḥammad Shāh).*

A.H. 776-780.

Gold.

Obverse.

Reverse.

15. السلطان  
الا عظم ظل  
الله في العالم

In a circle.

علا الدنيا  
والدين مجاهد  
شاه السلطان

Margin—

ضرب هذا الدينار في حضرة احنا اباد (sic.) سنة

سبع و سبعين و سبع مائه

Weight, 192 grs, Brit. Mus., cf. Codrington, pl. 17, fig. 8.

Silver.

16. السلطان الا عظم  
علا الدنيا والدين  
ابو الغازي مجاهد  
شاه السلطان

In a square within a circle.

الميد بنصر الله  
يمين الخليفته ناصر  
امير المؤمنين

Margins as on No. 8.

Weight, about 170 grs.

Dates known :—A.H. 778, British Museum.

A.H. 779, Gibbs, No. 5.

17. In an irregular hexagon.

ابو  
الغازي

مجاهد  
شاه

Weight, 54 grs., British Museum, cf. Codrington, pl. 17,  
fig. 9.

V. *Dā'ūd Shāh I (bin Maḥmūd Khān).*

No coins known.

VI. *Muḥammad Shāh II.*

A.H. 780-799.

*Gold.*

<i>Obverse.</i>	<i>Reverse.</i>
18. <sup>1</sup> المفتاح باواصر الرحمن المسترشد بإله المنان	الناصر [لأيو] ؟ لا خان أبو المظفر محمد شاه السلطان
	۷۹۶

*Weight*, 168·7 grs., British Museum.*Silver.*

19. الثا صرلدين الديان الحامي لا مل الا بيان	In a square in a circle. الوائق بتائد الرحمن أبو المظفر محمد شاه السلطان
	Margins as on No. 8.

*Weight*, about 170 grs.Dates known :—A.H. 791 to 799.<sup>2</sup>*Copper.*

20. <sup>3</sup>	In a circle.
عبد	محمد
معبود	محمد

Margin :—

..... وتسعين .....

*Weight*, about 80 grs., Codrington, pl. 17, fig. 11.VII. *Ghiyāṣu-d-dīn Bahman Shāh.*

No coins known.

<sup>1</sup> I have been favoured with a cast of this coin which is evidently a fine specimen. The inscription is very plain and complete with the exception of the top line of the reverse.

<sup>2</sup> It is noteworthy that no coin of Muḥammad Shāh II. dated earlier than A.H. 791, has as yet been discovered.

<sup>3</sup> I have followed Codrington in attributing this issue to Muḥammad Shāh II. The attribution, however, must remain doubtful until specimens bearing legible margins come to hand.

28 N. *Journal of the Asiatic Society of Bengal.* [N.S., XIX,

VIII. *Shamsu d-dīn Dā'ūd Shāh II (bin Muḥammad Shāh II).*

A.H. 799.

*Silver.*

*Obverse.*

21. المستوثق بالله  
الحنان ابو المظفر  
شمس الدنيا والدين

*Reverse.*

In a square in a circle.

داود شاه  
السلطان بن  
السلطان

Margins as on No. 8.

*Weight*, about 170 grs.

*Date* :—A.H. 799, cf. Gibbs, No. 7<sup>1</sup>

*Copper.*

22.<sup>2</sup> المريد  
بنصر الله  
ابو المظفر

In a circle.

داود  
شاه

*Margin* :—

..... تسع وتسعين .....

*Weight*, about 82 grs.

*Date* :—A.H. (7)99, British Museum.

IX. *Fīroz Shāh (Roz A/zūn).*

A.H. 800–825.

*Gold.*

*Obverse.*

23. الشهدان لا  
اله الا الله وحده  
لا شريك له واشهد  
ان محمد عبده  
ورسوله

*Reverse.*

In a circle.

الوائق بتائيد  
الرحمن ابو  
المظفر فيروز  
شاه السلطان

*Margin* :—

ضرب هذا الدينار بحضور دار الملك  
احسنا باد سنة ثمانها يمتة

*Weight*, 195 grs., British Museum from Da Cunha Coll.,  
cf. Gibbs, No. 8.

<sup>1</sup> Other specimens were in the White King and Thanawala Collections.

<sup>2</sup> Codrington, in the absence of a legible margin on a specimen, attributed this issue to Dā'ūd Shāh I.

*Silver*

24. السلطان  
العبد والرحمن  
الواثق بتأييد  
الرحمن
- In a square in a circle.  
ابو المظفر تاج  
الدنيا والدين  
فيروز شاه  
السلطان

Margins :—

right احسنا باد

lower ۸۰۵

*Weight*, 169 grs., Thanawala, J.A.S.B., 1909, No. 7.

- 25.<sup>1</sup> سلطان  
العبد والرحمن  
الواثق بتأييد الرحمن  
ابو المظفر
- In a square in a circle.  
تاج الدنيا  
والدين فيروز  
شاه السلطان

Margins as on No. 8.

*Weight*, about 170 grs.

Dates known :— A.H. 800 to 825 (except A.H. 809).

*Copper.*

26. راجى  
رضوان  
مهيمنى
- In a circle.  
فيروز  
شاه بهمنى
- Margin :—  
ضرب بفضرة احسنا باد
- and date in Arabic.

*Weight*, about 80 grs.

Dates known :— A.H. .. 1, cf. Burn, J.A.S.B., 1907.  
A.H. .. 5, cf. Burn, J.A.S.B., 1907.

27. الحاكم  
بامر الله
- فيروز  
شاه

*Weight*, about 40 grs.


<sup>1</sup> There are two varieties of this issue. In the earlier issues (A.H. 800 to 804) the loop on the ح on the reverse is short; on the later issue the loop is closed.

<sup>2</sup> This reading is not certain. On a coin in my collection the words "ضرب بفضرة احسنا باد" are very clear.

X *Aḥmad Shāh I*<sup>1</sup> (*Walī Bahmanī*).

A.H. 825-838.

*Silver.*

<i>Obverse.</i>	<i>Reverse.</i>
28. السلطان العادل البازل الناصر لدين الديان ابو المغازى	In oval area. شباب الدنيا والدين احمد شاه السلطان above (inverted), ضرب بعفرت with m.m.  ; below, حسنا باد and date.

*Weight*, about 170 grs.

Dates known :—A.H. 826, Gibbs, No. 13

A.H. 827, Coll. H. M. Whittell.

A.H. 828, White King Coll.

A.H. 829, British Museum.

*Copper.*

29. المستوثق بالله العنان المنان الغنى	سلطان احمد شاه بن احمد بن الحسن البهنسى Date.
--	--

*Weight*, about 250 grs.

Dates known :—A.H. 832, British Museum.

A.H. 833, Burn, J.A.S.B., 1907

A.H. 838, Burn, J.A.S.B., 1907.

30. المويد بنصر الله الملك العنان	بعفرت (inverted). ابو المغازى احمد شاه السلطان Date and احمد اباد
---	--

*Weight*, about 120 grs.

Dates known :—A.H. 827 (?), Burn, J.A.S.B., 1907 (but mint not legible).

A.H. 832, Burn, J.A.S.B., 1907.<sup>2</sup>

A.H. 833, Thanawala Collection.

A.H. 835, British Museum.

A.H. 836, Codrington, No. 1. p. 267  
(pl. 17, fig. 12).

<sup>1</sup> Aḥmad Shāh I made Bīdar (Muḥammadābād) his capital in A.H. 826.

<sup>2</sup> Therefore, although Bīdar was made the capital in A.H. 826, the earliest known date for a coin bearing this mint name is A.H. 832.

A.H. 837, Coll. H. M. Whittell.

A.H. 838, British Museum.

- |     |                               |                                 |
|-----|-------------------------------|---------------------------------|
| 31. | المصور<br>بنصر الله<br>المثان | ابو المغازي<br>احمد شاه السلطان |
|     |                               | Date.                           |

*Weight*, about 80 grs.

Dates known :—A.H. 825 to 831, 834, 835 and 837.

## XI. 'Alāu-d-dīn Akmad Shāh II.

A.H. 838–862.

*Gold.**Obverse.**Reverse.*

- |     |   |  |
|-----|---|--|
| 32. | سلطان<br>القوى الاسلام<br>مع الفصل والعدل<br>والاحسان | In a square in a circle.<br>ابو المظفر علا<br>الدنيا والدين<br>احمد شاه بن احمد<br>شاه السلطان |
|-----|---|--|

Margins as on No. 8 but mint  
name probably محمد آباد.*Weight*, about 170 grs.Dates known :—A.H. 853, British Museum, cf. Delmerick,  
J.A.S.B., 1876.

A.H. 855, Ind. Mus. Cat., No. 18.

- |     |   |   |
|-----|---|---|
| 33. | السلطان<br>الحليم الكريم<br>الروف على عباد الله<br>الغنى المهيمنى | In a square in a circle.<br>ابو المظفر علا<br>الدنيا والدين احمد<br>شاه بن احمد شاه<br>الولى اليمنى |
|-----|---|---|

Lower margin ٠٨٦

*Weight*, 171 grs., Gibbs, No. 14.*Silver.*

34. As on No. 32.

As on No. 32.

*Weight*, about 170 grs.Dates known :—A.H. 844, 845, 847, 850, 852 and 856  
to 861.

*Copper.*

35. <sup>1</sup>	محتل المعتصم بأ لله المثلان سمي خليل الرحمن أبو المظفر	علا الدنيا و الدين أحمد شاه بن أحمد شاه السلطان
		Date.

*Weight*, about 250 grs.

Dates known:—A.H. 838. 842 to 847. 849 to 854 and 857.

36. In a circle.

المحتول على الله الغني	أحمد شاه بن أحمد شاه الولي البهيمن
---------------------------	--

Margin:—

Date.

ضرب بحضور محمد آباد خجسته (?)

*Weight*, about 170 grs.

Dates known:—A.H. 849, 850, 852 to 857 and 860.

37.	الوائق بتأيد الملك لانا (sic) أبو المظفر	أحمد شاه بن أحمد شاه بهمني
-----	--	----------------------------------

Date.

*Weight*, about 124 grs.

Dates known:—A.H. 838 to 856, 859 to 860.

38.	بأ لله المستنصر الغني أبو المظفر	أحمد شاه بن أحمد شاه البهيمن
		Date.

Size 1. *Weight*, about 80 grs., Codrington, pl. 17, fig. 14

Dates known:—A.H. 839 to 841. 843, 844, 847, 848, 850, 853.

Size 2 *Weight*, about 52 grs

<sup>1</sup> Since receiving Major Whittell's monograph, I have had a communication from Ch. Muhammad Ismail of the Prince of Wales' Museum, Bombay, in which he also gives the hitherto unread word in the top line of the obverse as محتل. But his reading of the complete legend differs in one respect from that of Major Whittell: for بالله in the third line he would read الله.—EDITOR.

## XII. 'Alāu-d-dīn Humāyūn Shāh (Zālim).

A.H. 862-865.

Gold.

Obverse.

Reverse.

39. المتوكل  
على الله القوى  
الغنى ابر المغارى

علا الدنيا والدين  
همايون شاه بن احمد  
شاه بن احمد شاه  
الولى البيمنى

٨٦٢

Weight, 170 grs., British Museum.

Silver.

40. As above.

As above but

احسنا باد

in right margin.

Weight, about 170 grs.

Dates known:—A.H. 862 (?), Bleazby Collection (Sale Catalogue, No. 444).

A.H. 863, Ind. Mus. Cat., No. 32.

A.H. 864, Codrington.

Copper.

41. As above.

As above but no mint.

Size 1. Weight, about 245 grs.

Dates known:—A.H. 863 to 866.

Size 2. Weight, about 160 grs.

Dates known:—A.H. 863, British Museum.

A.H. 865, Coll. H. M. Whittell.

Size 3. Weight, about 115 grs., Codrington.

Size 4. Weight, about 77 grs., Codrington.

42. المتوكل  
على كرم الله  
الحنان الغنى

همايون شاه  
بن احمد شاه  
الولى البيمنى

Weight, about 125 grs., Ind. Mus. Cat., No. 33.

43. دارار  
زكا همان

همايون شاه  
بن احمد شاه  
السلطان

Weight 80 grs., British Museum, cf. Codrington, pl. 18,  
fig. 1.

XIII. *Nizām Shāh (bin Humāyūn Shāh).*

A. H. 865-867.

*Copper.*

<i>Obverse.</i>	<i>Reverse.</i>
44. In a circle.	احمد شاه
بنصر الله	بن همايون شاه
المستنصر	البيهنى
القوى الغنى	Date.

*Weight*, about 250 grs.

Dates known :—A.H. 866,<sup>1</sup> British Museum.

A.H. 867, British Museum, Codrington,  
pl. 18, fig. 2.

45.	الراجى	ابو المظفر
	الرحمن	احمد شاه
	بقائيد	السلطان
	Date.	

*Weight*, about 165 grs.

Dates known :—A.H. 866, British Museum.

A.H. 867, British Museum, Codrington,  
pl. 18, fig. 3.

46. <sup>2</sup>	المطيع	As above
	المثان	but
	بامر الله	date below.

*Weight*, about 125 grs.

Dates known :—A.H. 866, Codrington, pl. 18, fig. 4.

A.H. 867.

47.	الوائق	As on No. 45.
	الرحمن	
	بالله	

*Weight*, about 75 grs., Codrington, pl. 18, fig. 5.

<sup>1</sup> There is one in my collection with date ٨٢٢ (=866).

<sup>2</sup> A specimen in my collection of 127 grs. wt. has the obverse and reverse legends in circles and does not appear to bear a date.

XIV. *Shamsu-d-dīn Muḥammad Shāh III.*

A.H. 867 to 887.

*Gold.**Obverse.**Reverse.*

48. بالله  
المعتصم  
أبو المظفر شمس  
الدنيا والدين
- In a square within a circle.  
محمد شاه بن  
نمایونشاه  
السلطان خلد ملکه
- Margins as on No. 8 but mint  
محمد آباد

*Weight*, about 170 grs., Gibbs, No. 18.

Dates known :—A.H. 868, 873, 877 to 879.

*Silver.*


49. As above.
- Weight*, about 170 grs.  
Dates known :—A.H. 876 to 880, 886.
- As above.

*Copper.*



50. بالله  
المعتصم  
شمس الدنيا  
والدين
- محمد شاه  
بن نمایونشاه  
السلطان
- Date.

*Size 1. Weight*, about 250 grs.

Dates known :—A.H. 868 (٨٦٨ and ٨٢٨), 869 (٨٦٩ and ٩١٨), 870 to 872, 874 to 878, 879, 880, 882, 883 (٨٣٨), 884, 885.

Some of these have the m.m.  on obverse after الدين.*Size 2. Weight*, about 170 grs.

Dates known :—A.H. 870 (٨٠٧), 871, 873, 874, 877, 878, 882, 886.

Some of these have m.m.  on reverse and  on obverse.*Size 3. Weight*, about 120 grs.

Dates known :—A.H. 871 and 882.

*Size 4. Weight*, about 80 grs.

Date :—A.H. 87[ × ], Thanawala Collection.

XV. *Maḥmūd Shāh (bin Muḥammad Shāh III).*

A.H. 887 to 924.

*Gold.*

*Obverse.*

*Reverse.*

51. المتوكل على  
الله القوى الغنى  
السلطان الاعظم

In a square within a circle.

ابو المغازى  
محمود شاه بن محمد شاه  
الولي البهيمن  
Margins as No. 8.  
Mint محمد آباد ?


*Weight*, about 170 grs.

*Dates* :—A.H. 889, Bleazby Coll. (Sale Cat., No. 445).

A.H. 891, Da Cunha Coll.

A.H. 895, British Museum.

A.H. 898, British Museum.

The m.m.  occurs on the obverse of some specimens, (cf. Delmerick, J.A.S.B., 1876).

*Silver.*

52. As above.

As above.

*Weight*, about 170 grs.

*Dates* :—A.H. 887, Thanawala Collection.

A.H. [8]88, Thanawala Collection. (This coin  
has محمد آباد in right margin.)

*Copper.*

53. المتوكل على  
الله الحنّان المَنَّان  
ابو المغازى

محمود شاه  
بن محمد شاه  
السلطان

*Date.*

*Size 1.* *Weight*, about 250 grs., Codrington, pl. 18, fig. 6.

*Dates known* :—A.H. 887 to 890.

*Size 2.* *Weight*, about 200 grs.

*Size 3.* *Weight*, about 120 grs.

*Date* :—A.H. 889, Coll. Bombay Br. R.A.S.

A.H. 909 (?), Coll. H. M. Whittell.

*Size 4.* *Weight*, 84 grs., Coll. H. M. Whittell.

54. على الله  
المتوكل

محمود  
شاه بن  
محمود شاه

*Weight*, 78 grs., British Museum.

55. المتوكل على  
الله القوى  
الغني

محمود شاه  
بن محمد شاه  
البهمي  
٨٨٧

Weight, about 165 grs.

Date:—A.H. 887, British Museum, Codrington, pl. 18,  
fig. 7.

56. المتوكل على  
الله الحكيم المظفر  
ابو المغازي

As above  
but no date.

Weight, about 165 grs.

57. As on No. 55.

محمود شاه  
بن محمد شاه  
السلطان

Weight, about 165 grs.

58. ....  
.....  
الله الغني

السلطان  
محمود  
البهمي

Weights, 152 grs. and 128 grs., Coll. H. M. Whittell.

#### XVI. *Aḥmad Shāh III.*

No coins known.

#### XVII. 'Alāu-d-dīn Shāh.

No coins known.

#### XVIII. *Walī-ullah Shāh (bin Maḥmūd Shāh).*

A.H. 929-932.

Copper.

59. بنصر الله  
الموید الملک  
القوی الغنی

ولي الله  
السلطان بن  
محمود شاه  
البهمي

Weight, about 250 grs., Thanawala Coll., Codrington,  
pl. 18, fig. 8

- |     |                                 |                                |
|-----|---------------------------------|--------------------------------|
| 60. | الله<br>بنصر<br>الموید<br>الغنی | ولے الله<br>السلطان<br>الہیمنی |
|-----|---------------------------------|--------------------------------|

Size 1. *Weight*, about 165 grs., Codrington, pl. 18, fig. 9.

Size 2. *Weight*, about 125 grs.

- |     |                                |  |
|-----|--------------------------------|--|
| 61. | As above but<br>without الغنی. | As above but<br>date in place<br>of الہیمنی. |
|-----|--------------------------------|--|

*Weight*, 84 grs.

Date :—A.H. 930, cf. Codrington, pl. 18, fig. 10.

*Kalīm-ullah Shāh (bin Mahmud Shāh).*

A.H. 932 to (?).

*Copper.*

- |     | <i>Obverse.</i>                 | <i>Reverse.</i>                             |
|-----|---------------------------------|---|
| 62. | الله<br>بنصر<br>الموید<br>الغنی | الله<br>کلیم<br>السلطان<br>الہیمنی<br>Date. |

Size 1. *Weights*, 166 to 176 grs.

Date :—A.H. 942, Codrington.

Size 2. *Weights*, 118 to 146 grs.

Size 3. *Weight*, 85 grs.

- |     |  |  |
|-----|--|--|
| 63. | بنصر الله<br>الموید الملک<br>القوی الغنی | کلیم الله<br>السلطان بن<br>محمود شاه<br>الہیمنی<br>Date. |
|-----|--|--|

*Weight*, about 250 grs., Codrington, pl. 18, fig. 11.

Date :—A.H. [93]3, Coll. C. J. Brown.

A.H. 950, Thanawala Collection.

- |     |                                      |   |
|-----|--------------------------------------|---|
| 64. | علی الله<br>الموید کل<br>القوی الغنی | الله<br>کلیم<br>السلطان<br>محمود<br>الہیمنی |
|-----|--------------------------------------|---|

*Weight*, about 250 grs.

65.	الله بنصر الموید	الله کلیم السلطان ۹۳
-----	------------------------	-------------------------------

*Weight*, about 90 grs., Codrington, pl. 18, fig. 12.

66.	الله کایم	ن السلطان ۹۳۵
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*Weight*, 45 grs., cf. Codrington, No. 5.

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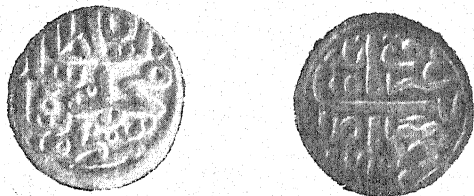
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*Peshawar, N.-W.F.P., India.*  
26th September, 1922.

H. M. WHITTELL, Major,  
*Indian Army.*

235. AN UNIDENTIFIED COIN OF GUJARĀT.



The coin which is the subject of this note is of good silver of the ordinary Gujarātī Sulṭān type. Its weight is 110 grains, its diameter about .68 inch and it is round in shape. **Plate III, 1.** [Pandit Ratilal Antani's coin, see *Note (2)*] On the reverse the inscription is clear beyond all dispute.

السلطان  
بن محمد شاه  
مظفر شاه

On the obverse عرف ماندد and the date 963 are also certain. The intervening letters have not been read. The word ضرب appears indicated as one would expect—but then something like امر or امر and شاه *vide* the plate illustration A.<sup>1</sup> It is in very good condition and the letters are clearly struck. The

<sup>1</sup> This paper has unfortunately been held up for a considerable time during which a good deal of criticism has gathered round it. As some of this may help towards the solution of the problem presented by this puzzling coin, a summary of it is given here :—

(1) Pandit Ratilal Antani sent in a paper entitled “A Coin in conflict with History” on a coin similar to the above but dated 964, wt. 109 grs., size, .66: but he was unable to throw any further light on the problem.

(2) Mr. R. B. Whitehead suggested the following reading for the reverse “963 ahd zarbat ‘urf Māndū.” “This is the clear reading” he says, “in spite of the facts that we are not given the ‘urf of Mandu, that the word *zarbat* is archaic and the word *ahd* somewhat previous.”

(3) Mr. H. N. Wright says: “These silver coins were almost certainly issued by the same king as those in B.M.C. Muhammadan States, Nos. 437-439... My own view is that 963 is certain and that what has been taken for احد or اخلد is connected with the mint-name, of which ماندو is the

alias: اخلد is untenable, as the copper coins have the full خلد الله ملكه

on the obverse. The coins are ‘Mālwa’ not ‘Gujarāt’ as indicated by the mint marks (2 or 3) on the copper coins. The king’s name is “Muḥammad bin Muḥaffar” not “Muḥaffar bin Muḥammad.” But who he was and how he came to issue coins we have yet to learn.”

(4) Professor S. H. Hodivāla drew attention to the silver coin (No. 4511) and the copper piece (No. 4512), both dated 964 A.H., recorded in the White King Sale Catalogue, and also to the fact that B.M.C., Muhammadan States, No. 439, a copper piece dated 963, is square.

legends on the reverse of Gujārātī coins are read from the bottom upwards. All the specimens shown in the Indian Museum Catalogue and Dr. Taylor's article in the Journal of the Bombay Branch of the Royal Asiatic Society, 1904, p. 278, agree in this. We know then that the ruler who struck this coin was Muẓaffar, the son of Muḥammad, and that the coin was struck in Māndū in the year 963 Hijri. The ruler of Gujārāt from 961 to 968 Hijri was Ghiyāṣu-d-dunyā wa-d-dīn Aḥmad Shāh III. "Early in this reign, a party headed by Ikhtiyāru-l-Mulk espoused the cause of another aspirant to the throne, a person named Shāhū, the Sultān's paternal uncle; but in a battle fought near Maḥmūdābād this Shāhū and his supporters were defeated." The Mir'āt-i-Aḥmadi from which Dr. Taylor's sentence above quoted is mainly derived, calls Aḥmad III, son of Laṭīf Khān, who was grandson of Shukar Khān, son of Sultān Aḥmad I. But this does not give the name of the grandfather of Aḥmad III. In the genealogy given by Dr. Taylor, Aḥmad III is put down conjecturally as the son of Maḥmūd III, who was son of Laṭīf Khān. In this case if the word 'uncle' were used strictly Shāhū would have been son of Laṭīf Khān. Shāhū is *à priori* the person whom one might suppose to have issued this coin. Numismatists have debated about a Muḥammad Shāh, pretender, who is supposed to have struck coin in 963 Hijri. Mr. Oliver, in his article on Gujārāt coins in the Journal of the Asiatic Society of Bengal (1889), attributed a billon coin to this Muḥammad and the British Museum Catalogue assigns copper coins to him. Dr. Taylor, in his article, disbelieves in this alleged ruler Muḥammad. There seems no reason to read downwards the reverse of the coin now under consideration—if this were done, it might be argued that it was the pretender Muḥammad re-appearing.

Dr. Taylor points out that the Mir'āt-i-Aḥmadi specifically asserts that during the reign of Maḥmūd III, (who died in 961), a grandson of Aḥmad Shāh II was set up as Sultān. Coin was struck in his name and he took the title of Muẓaffar Shāh. It is possible that this coin may belong to him. No specimen of this alleged coinage has yet been found. But as Muẓaffar's rebellion was crushed about 950 it is most unlikely that this coin can be his.

In Mālwa Shujā' Khān who had ruled the country for twelve years died in 962 A.H. His three sons Malik Bāyazīd, Daulat Khān and Mustāfa Khān at first divided the country between them. Daulat Khān had the districts contiguous to Ujjain and Māndū. Malik Bāyazīd, however, treacherously killed Daulat Khān and was crowned king of Mālwa under the title of Sultān Bāz Bahādur in 963 A.H. He soon after defeated his remaining brother Mustāfa Khān and also several rebellious officers. Bāz Bahādur's coins are well known in copper but follow the Mālwa type and are quite unlike this coin.

Dr. Taylor offered two alternative explanations, on the supposition that 963 is a mistake for 923. The first hypothesis is that the coin was struck by Muẓaffar II of Gujarāt. In 923 he was helping to restore Maḥmūd III of Mālwa to his throne, and he actually captured Māndū in 924 A.H. and the date is given by the hemistich قد فتح المندو سلطان نا *Qad fath al Mandū*

*Sulṭān nā*. But he at once restored the sovereignty of Mālwa to Maḥmūd although he might easily have kept it for himself; and moreover Muẓaffar II of Gujarāt was *bin Maḥmūd* and not *bin Muḥammad*.

Another guess is this. From 916 A.H. until 921 A.H. Ṣāhib Khān, brother of Maḥmūd II of Mālwa, assumed the title of Sulṭān Muḥammad (White King, Num. Chron., 1903). It is possible that in the year 923, a son of Ṣāhib Khān called himself Sulṭān Muẓaffar and struck coin in Māndū, perhaps even while Muẓaffar II of Gujarāt was besieging it. This is perhaps more plausible although there was no reason for this pretender to adopt the Gujarātī type of coin.

In conclusion I must express my grateful thanks to the late Dr. Taylor who kindly corresponded with me about this coin and from whose letters or article nearly every fact in this note has been derived.

T. B. HORWOOD.

• 236. AN UNPUBLISHED COPPER COIN OF JAHĀNGĪR OF  
ŪJAIN.

I possess two coins of Jahāngīr apparently hitherto unpublished. They may be of two different types. Both are rectangular in shape.

*Weights*: each about 100 grains.

*Size*: B, .55 × .52; C, .6 × .56 inch.

*Legend*: Obverse.

نجر  
سنه جيا  
سله

Reverse.

.....  
وجين  
ضرب

Provenance, Ujjain, in a batch with other copper coins of Ujjain of Akbar and Shāh Jahān.

T. B. HORWOOD.

237. ON SOME MĀLAVA COINS.

The coins described in this paper are commonly known as the Mālava coins. They were, like all other similar coins hitherto collected, found at Nāgar in the Jaipūr State and were given to me by Mr. Nelson Wright.

The site of the ancient city of Nāgar lies within the territories of the Raja of Uniara, a feudatory of Jaipūr. Uniara is situated just south of Tonk.

Vincent Smith writes in this connection: "Here Carlleyle found the remains of a city of high antiquity with a multitude of old temples and great embankments. . . . The Mālava coins occurred in large numbers in many spots, and he 'found the small green old coins in some places lying as thick as shells on the seashore.' Altogether he and the people employed by him gathered more than six thousand; out of which not more than about 35 coins were of outside origin or derived from a foreign source. With the exception of these few, the whole of the coins found at Nāgar were exclusively of Nāgar mintage and belonged to Nāgar alone."

The coins described by Vincent Smith in his Indian Museum Catalogue are a part of that find. A large proportion of this find has been lost.

The date of these coins is disputed. Carlleyle and Cunningham put the date at 250 B.C. to 250 A.D. Vincent Smith and Prof. Rapson are agreed that the initial date for the coins is about 150 B.C. But they are not agreed as to the respective dates of the various types or the date of the cessation of these local issues. Vincent Smith is probably right in attributing the cessation of this local coinage to Samudra Gupta's conquest of North India. According to his latest history this will fix the date of the latest issue at about 350 A.D. But I think that Vincent Smith is wrong when he says that the larger coins, specimens 1-11 in his Catalogue, are among the earliest. I am inclined to think that Prof. Rapson is nearer the mark when he puts them among the later Mālava issues, owing to their similarity to the coins of the Nāgas of Padmavati. My reasons for agreeing with Prof. Rapson are—

(1) In the 2nd century B.C. (the date assigned for these types by Vincent Smith) Prākṛit inscriptions were the order of the day. None of the inscriptions known to date from that period are in pure Sanskrit. The legend read on these coins is *Malavānām Jayah*. This is pure Sanskrit. The termination commonly used for the genitive plural in Prākṛit is -āṇā, sometimes -ānam, never -ānām.

(2) I am of the opinion that *Mālāya* is the older form of the tribal name. This is a form found on some of the coins. Now, there is a people mentioned in Sanskrit literature as living in the east of the Panjab, called variously the Mālāya, the Malaya, or the Mālava tribe. They were the people who put up the stoutest resistance to Alexander during his campaign in the Panjab. The Greeks called them the Malloi. Had the name *Mālāva* been in common use at that time, I feel sure that the Greeks would have transliterated the word as the

Malluoi. This seems to me to show that the commoner form of the tribal name at the time of the Greek invasions was *Mālaya*.

There seems to me to be little doubt that these mysterious Mālavas of the coins were the descendants of the people who faced Alexander 150-200 years before, driven away by continual pressure from the North-West from their prosperous settlements along the valleys of the Ravi and the Beas to the more rugged and barren, but less accessible country to the south of Tonk. This view is supported by the fact that some of the coins have inscriptions reading from right to left. This would seem to betoken an origin from further North-West, where, under the influence of the Kharosthī script, Brāhmī inscriptions are found reading from right to left.

I, therefore, conclude that the earlier coins are those on which *Mālaya* or *Malaya* is read or on which there are inscriptions reading from right to left. This would put Nos. 1, 2, 3 and 16 of those described as among the earliest.

There seems to be a great variety of types among these Mālava coins. Both Carlleyle and Vincent Smith recognize a good many different types. Among the collection described here none of those with anything at all distinguishable on them are duplicates. As in Carlleyle's collection there are few coins among them of obviously foreign origin. Thanks to the unpleasant climate and the inaccessibility of their home, the Mālavas were left undisturbed by fresh invasions from the North-West or by the formation of fresh empires in India. The fact that very few coins of outside origin are found at Nāgar shows that the Mālavas were more or less out of touch with the rest of the world. It is obvious too that these coins would have been of little use in dealings with merchants living at a distance from Nāgar. Their only use could have been in minor transactions in the local markets, and it must have been a poor community that could find a use, even in local dealings, for such low-valued coins.

The only coins among this collection which I can definitely recognize as foreign coins appear to be specimens of the coins of Mahārājā Deva, one of the Nāga kings of Narwar. It has been clearly established before that there was some sort of connection between these two small communities. I am inclined to think that specimens 58, 59, 60 and 72 (a) in Vincent Smith's Catalogue are Nāga coins and that the correct reading on all these specimens is *Mahājanasa jaya*. There are distinct points of similarity in design between them and the coins of Mahārājā Ganapati of Nāga.

It is possible that No. 29 is an Avanti coin, but I can find no parallel coin to it in Vincent Smith's Catalogue. All the other coins given in the attached list are, I think, local.

*List of Coins.*

(1) *Obverse*.—*Mālaya* *Reverse*—Obscure markings in the shape of irregular dots. I cannot find this in either Rodgers' <sup>1</sup> or Vincent Smith's Catalogue. If the theory put forward above is correct. This should be one of the earlier coins. It is thicker and of coarser workmanship than many of the coins.

(2) *Obverse*.—*Mala* in clear letters written twice. On top from left to right, below from right to left. Inscription complete.

I have mentioned this coin above. I consider it one of the older types. It too like No. 1 is rather thicker than the majority of the coins for its size. *Mala* may be the name of some king named after the original founder of the tribe. *Mālaya* is probably a derivative from "mala" meaning simply "the tribe of Mala."

(3) *Obverse*.—*Mala* in the centre of the coin; very faint. Probably the complete inscription. *Reverse*.—Defaced. This is probably a kindred coin to No. 2, but a later issue.

(4) *Jamapa* on obverse. *Reverse*.—Obscure. This is probably the same coin as No. 12455 in Rodgers' Catalogue and No. 99 in Vincent Smith's Catalogue. Possibly Vincent Smith is mistaken in reading a 'ya' endwise, and this mark is only a defect in the coin.

(5) *Obverse*.—*Yama* on left and tree in railing on right. *Reverse*.—Defaced. This coin seems to be connected with No. 69 in Vincent Smith's Catalogue, where *Yama* and a tree in a railing are found on the obverse. But it is differently arranged.

(5A) *Obverse*.—(*Ma*)?—*Gaja*. *Reverse*.—Elephant facing right. This is probably the same as Nos. 82 and 83 in Vincent Smith's book. *Gaja* is Sanskrit for an elephant. So the device on the reverse seems to have some connection with the name. The prefix 'ma' in these coins may possibly be an abbreviation for 'Mahā' meaning 'great' or it may be the mysterious name 'Ma' applied to the three gods of the Trimurti. *Magaja* would then mean "elephant of Śiva" or "elephant of Vishnu," etc.

(6) *Obverse*.—Tree and *Na Jaya*. *Mālava* obscured. *Reverse*.—Obscure, but probably animal with horns facing left. Similar to Nos. 49 to 58 in Vincent Smith's Catalogue and 12411 in Rodgers' Catalogue. But I can find no exact parallel.

(7) *Obverse*.—*Mālava* only, in bold characters set in an incuse circle. *Reverse*.—Humped bull facing left in standing position. I can find no parallel to this coin in either Rodgers'

<sup>1</sup> C. J. Rodgers, *Catalogue of the Coins of the Indian Museum*, Part III, Calcutta, 1895, p. 15.

or Vincent Smith's, though it belongs to the circular 'Bull type.'

(8) *Obverse*.—*Mālava* only, across the centre. *Reverse*.—Humped bull facing left. Somewhat similar to No. 7.

(9) *Obverse*.—Palm-branch with *Mālava* on one side and *Na Jaya* on the other. *Reverse*.—Animal facing right in dotted border. This is possibly the same as No. 28 or 30 in Vincent Smith's Catalogue.

(10) *Obverse*.—*Mālava*; *Na Jaya*. *Reverse*.—Humped bull facing left, recumbent. Rectangular shape. I can find no parallel to this in Vincent Smith's Catalogue, though it is somewhat similar to No. 37.

(11) *Obverse*.—*Mālava* only in the centre of the coin. *Reverse*.—Bull facing left. I can find no exact parallel to this. Possibly same as 12456 of Rodgers' Catalogue.

(12) *Obverse*.—*Mālava sujaya*. *Reverse*.—Humped bull facing right. This coin is fairly large and square. I can find no parallel in the catalogues. The letters are fairly distinct and I am convinced that the first letter in the second line is not 'na.' I read 'su' which gives good sense. The inscription then reads "The well-conquering *Mālava*."

(13) *Obverse*.—*Mālava* in incuse square. *Reverse*.—Animal facing left. This coin is cylindrical in shape, I can find no exact parallel to it.

(14) *Obverse*.—*Mālava* and tree. The part obscured is probably '*na jaya*.' *Reverse*.—Lion facing left. Probably similar to No. 28 in Vincent Smith's Catalogue.

(15) *Obverse*.—*Mālava*; *Na Jaya*; very faint. *Reverse*.—Lion facing right. This coin does not appear to resemble any of the 'Lion type' coins in Vincent Smith's Catalogue.

(16) *Obverse*.—*Malaya* or *Mālava* in bold letters across the middle. The last letter is very badly formed if it is meant for a 'va.' It looks very much like a 'cha.' Perhaps we should read *Malacha*. I see in Rodgers' Catalogue a coin of about the same size on which he reads *Mapacha*. It is possible that this is the same coin. The middle letter however looks to me more like a 'la' as the second stroke is longer than the first. On the whole I am inclined to think it is a 'ya' turned sidewise as in No. 73 of Vincent Smith's Catalogue. Under a magnifying glass there are distinct traces of the upper part of the letter being turned back like the lower part. The whole coin has a distinct similarity to No. 73 of Vincent Smith's Catalogue. In that coin too the middle letter looks to me more like a 'la.' If *Malaya* is the correct reading, this coin should be placed among the earlier coins. It is certainly like them in construction.

(17) *Obverse*.—*Mālava* in centre. *Reverse*.—Elephant. I can find no parallel to this coin. It is in fairly good con-

dition, and by the formation of the letters and general appearance I judge it to be one of the later types.

(18) *Obverse*.—*Mālava* only. *Reverse*.—Defaced.

(19) Ditto.

(20) *Mālava* on top and traces of *ya* below. *Reverse*.—Defaced.

(21) *Obverse*.—*Mālava* and tree. *Reverse*.—Defaced.

(22) *Obverse*.—Tree and ?—*jaya*. *Reverse*.—Defaced.

(23) *Obverse*.—*Mala*—? (*va*). *Reverse*.—Tree in railing.

(24) *Obverse*.—Tree in railing on left: right, letters obscured. *Reverse*.—Animal in dotted border. I can find no parallel to this in the catalogues.

(25) *Obverse*.—Tree with traces of inscription on each side. *Reverse*.—Small vase in dotted border. Similar in type to Nos. 14–22 in Vincent Smith's Catalogue, and Nos. 12426–12429 of Rodgers' Catalogue.

(26) *Obverse*.—Tree and legend *jaya*. *Reverse*.—Indistinct. Possibly a figure between two sacrificial posts in a dotted square. I cannot find anything with a similar reverse to this in the catalogues.

(27) *Obverse*.—*Mala*—? (*va*) *Reverse*.—Vase with handles. There appears to be nothing exactly like this in the catalogues.

(28) Legend in two lines somewhat obscure. This is possibly the same as No. 12 in Vincent Smith's Catalogue, i.e., *Obverse*.—*Mālava* and *jaya*. *Reverse*.—Lotā in dotted circle.

(29) *Obverse*.—Ujjain symbol. *Reverse*.—Obscure markings on one edge, one of which resembles conventional sign for a lotus flower.

(30) Open lotus flower on one side. Other side defaced. Possibly the same as No. 12425 in Rodgers'.

(31) *Obverse*.—*Mālava*. *Reverse*.—Lotus flower.

R. O. DOUGLAS.

30th December, 1921.

### 238. NOTES ON THE COINAGE OF TIPPERRA.

AR



Rājadhara, 1508 S.

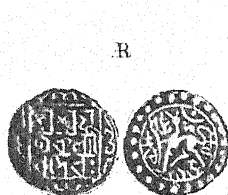
Fig. 1.

AR



Yaśodhara, 1522 S.

Fig. 2.



Kalyāṇa, 1548 S.

Fig. 3.



Ratna, 1607 S.

Fig. 4.

1. *An alleged Coin of Gauda Govinda of Sylhet.*

I have to thank Mr. H. E. Stapleton, I.E.S., for drawing my attention to an article which deals with a coin of unknown provenance belonging to the cabinet of the Indian Museum, published by Mr. R. D. Banerji, M.A., in *Numismatic Supplement* No. XXXIII (J.A.S.B., No. 3, 1920, pp. 86 and 87). Dr. Smith, in his *Indian Museum Catalogue*, Vol. I, p. 314, read the obverse legend on this coin thus:—

1. Śaśāka Gu
2. .. .. . chi
3. tta Devaḥ.

The coin is illustrated as No. 6 of Plate XXX of the Catalogue. Mr. Banerji first read the legend as “Guna-govinda Devaḥ”; but Paṇḍit B. B. Vidyāvinoda, Asst. Curator, Archaeological Section, Indian Museum, corrected the reading to “Gurugovinda Devaḥ,” which Mr. Banerji now accepts. On the strength of this reading he proceeds to identify this Gurugovinda as Gaudagovinda, the king who is said by tradition to have been ruling at the time of the conquest of Sylhet by the Muhammadans. Mr. Banerji reads the date on this coin as 140(?)2 Śakābdā, and then enters into some speculations as to the date of the first conquest of Sylhet. He also attempts to explain how Gurugovinda, the correct form of the name came to be misspelt in Bengali books as Gauragovinda, by assuming that the scribes, in their carelessness, left out the final , in writing گور, and thus گور came to be transliterated in Bengali as Gaura. He apparently overlooks the fact that the name was always written in Bengali as Gauda and not Gaura.

I would first draw attention to the fact that the date of the first conquest of Sylhet ceased to be an object of speculation, when Mr. Stapleton published an inscription from Sylhet in the August number of the *Dacca Review* for 1913, p. 154.

The inscription clearly states that the first conquest of Sylhet was accomplished by Sikandar Khān Ghāzī in the time of Shamsu-d-dīn Fīroz Shāh in 703 H = 1303 A.D.

اول فتح اسلام شهر عرصه سورهت بدست سکندر خان غازی در عهد سلطان  
فیروز شاه دهلوی سنه ثلث و سیمائة \*

"The first conquest by Islam of the town *Arsat* *Srihat* was by the hand of Sikandar Khān Ghāzī in the time of Sulṭān Fīroz Shāh Dehlavī in the year 703 H."

As regards the coin itself, strangely enough, Mr. Banerji himself described some time ago in the Annual Report of the Archaeological Survey of India for 1913-14, pp. 249-53, no less than nine coins of Tippera of this type, two of them with precisely similar phraseology of legend. The photograph of the alleged coin of Gurugovinda published with Mr. Banerji's note in the J.A.S.B. is much less distinct than the one published in the I.M.C.

The following appears to be the correct reading of the coin :

Obverse.—Ś r i ś r i y u  
ta Govi  
nda Deva ḥ.

Reverse.—Lion running to proper right; a √ mark on his back. Between the two fore-legs २३; between the two hind legs १५; between the hindmost leg and the upturned tail + >.

N.B. A small cross or four-pointed star stands for √. This form of eight may be seen on the first page of leaf 3 of the manuscript of Śrī Krishṇa Kīrtana in the Vaṅgiya Sāhitya Paṛiśat edition of the book. The unit I believe is 1. But it may be a cramped 2 with the lower limb very short. It is difficult to understand how Messrs. Banerji and Vidyāvinoda read the *ta* at the beginning of the obverse second line as *na* or *ru*, as exactly similar *ta*'s appear on two of the coins described by Mr. Banerjee in the report of the Archaeological Survey, referred to above.

There is a dagger-like perpendicular stroke between the second *śrī* and *yu*, which is very probably the trident of Śiva. Govinda Mānikya was a renowned Śaiva. (Rājamālā, by Kailāsa Chandra Śiṃha, p. 93.) The trident, it may be noted, is very clear in the same position in the coin of Ratnamānikya described below.

The coin is, therefore, one of Govinda mānikya of Tippera, dated in the Śaka year 1581.

The omission of the term Mānikya, the title of the Tippera Rājās, in the obverse legend, is rather unusual. But we must remember that it is a quarter-rupee and the space available for writing is rather meagre. Fortunately, we can support the reading by an exactly similar coin of Kalyāṇa-mānikya, father of Govinda-mānikya.

<sup>1</sup> The inscription is now in the Dacca Museum. Mr. Stapleton has recently republished the complete inscription. J.A.S.B., 1922, No. 7.

2. *A Quarter-Rupree of Kalyāṇa-māṇikya.*

This coin, along with a set of three other Tippera coins, was obtained through the exertions of Babu Narendranārāyaṇa Chakravartī, M.A., Sub-Deputy Magistrate, Comillā, from Babu Brajendra Kumāra Chātārjī, M.A., B.L., Asst. Manager of the Tippera Raj Estates, and the latter gentleman has kindly presented these coins to the Dacca Museum.

(1) Coin of Kalyāṇa-māṇikya Fig. 3.

Silver. *Size*, .66, *Weight*, 39 grs. Date 1548 S.

*Obverse*.—In a square, the margins outside it being occupied by decorative curves, as in the coin of Govinda-māṇikya described above—

শ্রী শ্রী

ত কল্যা

ণ দেবঃ .

*Reverse*.—In a circle within a circle of dots, grotesque lion running to proper right, with the right fore-paw raised. A ♀ mark at the top.

Between the two fore-legs . . . . . শক

Between the two hind-legs . . . . . ১৫

Between the hind-most leg and the upturned tail . . ৪৮

The last figure of the date has a cross-like appearance, but the two lines of the cross do not cut each other at right angles. This figure, as already pointed out, should be taken as 8.

I should like to draw attention to certain other points referred to in Mr. Banerji's note on the Coinage of Tippera in the Annual Report of the Archaeological Survey of India for 1913-14 :—

(a) The inexplicable syllables on the coins of Ratna-māṇikya which Mr. Banerji reads as *ddā*, *dva*, *ddā* are in all probability Śrī Durgā. The reading of Śrī Durgā, however, is not altogether free from objection.

(b) The date on the coins of Kṛṣṇa-māṇikya (A.S.R., 1913-14, Plate LXVII, Nos. 11 and 12) with his queen-consort Jāhnavī are read by Mr. Banerji as 1682 S. The figures on the silver coin are not very clear, but the second figure, at least, seems to be 5. In the case, however, of the gold coin (No. 12) the succeeding figures appear to be 62. The Rājamālā does not mention any Kṛṣṇa-māṇikya on the throne of Tippera in or about 1562 S., but one significant fact needs to be considered in this connection. The coin of Kalyāṇa-māṇikya in the Dacca Museum cabinet is dated in 1542 Śakābda. The next reliable date appears to be 1573 S., in a copper-plate grant of Kalyāṇa-māṇikya, published in the Rājamālā, p. 592. The

next date is 1581 S., on the coin of Govinda-māṇikya discussed above. There is also 1582 S., on a coin of Chhatra-māṇikya, second son of Kalyāṇa-māṇikya, noticed on page 39 of the Rājamālā.

The history of the period is confused and very little known. Yaśodhara-māṇikya came to the throne of Tippera in 1535 S., according to the Rājamālā; but his coin of 1522 S. in the Dacca Museum cabinet (to be described below) shows that he must have come to the throne at least thirteen years earlier. He is said to have come into collision with Jahāngīr, the Mughal Emperor, in 1613 A.D. (Rājamālā, p. 76), a statement which is shown to be very probable by the recent discoveries by Prof. Jadunāth Sarkār in the "Bahār-i-Stān," about Islām Khān's wars in Bengal. It is said that in his contest with the Mughal army, Yaśodhara was taken prisoner and sent to Dehli. The whole of Tippera was overrun by the Mughal army. Yaśodhara was offered peace on easy terms, provided he acknowledged the Mughal Emperor as suzerain; but he preferred abdication and died in Vrindāvana, a religious recluse, worshipping Viṣṇu.

The throne according to Yaśodhara's desire went to one Kalyāṇa-māṇikya, about whose parentage nothing is known, but who is said to have been a distant cousin of Yaśodhara.

Kalyāṇa-māṇikya, as we have already seen, reigned probably from 1548 S. to 1581 S. The 1562 S., which I propose to read on the coins of Kṛṣṇa-māṇikya, falls exactly between the two limits of Kalyāṇa-māṇikya's reign. The only suggestion I can make is, that during the long reign of Kalyāṇa-māṇikya, who did not belong to the direct royal line, his authority was disputed by a relation who thought he had better claims to the throne and who styled himself Kṛṣṇa-māṇikya on his coins.

### 3. *Coins of Rājadhara, Yaśodhara and Ratna-māṇikya in the cabinet of the Dacca Museum.*

The coin of Kalyāṇa-māṇikya in the cabinet of the Dacca Museum has already been described. I take this opportunity of putting on record three other ancient Tippera coins in the cabinet of the Dacca Museum.

(2) Coin of Rājadhara-māṇikya. Fig. 1.

Silver. Weight, 161 grs. Size, .92. Date 1508 S.

Obverse.—In a square—

শ্রী শ্রীযুত রাজ

ধর মাণিক্য দে

ব শ্রী সত্য ব

তী মহাদেবো।

The margins are occupied by scrolls.

*Reverse*.—In a circle, within a ring of small circles, with centres marked by points; grotesque lion running to proper right, with a trident fixed on its back, and a mark like an inverted comma appearing near its bent tail—

Between the fore paws	..	..	শক
Between the hind paws	..	..	১৫
Between the tail and the hindmost paw	..	..	০৮

The date is written ১৫০৮+ and the first figures are without doubt one, five and zero. Next is a solid cipher and then a cross. If the cross is ৪, the solid cipher does not count and the date is 1508 S. But if the cross is not a figure, then the date is 1500 S.

(3) Coin of Yaśo-māṇikya, son of Rājadhara-māṇikya.  
Fig. 2.

Silver. *Weight*, 163 grs. *Size*, .94. *Date*, 1522 S.

*Obverse*.—As in the previous coin, in a square, the margins outside being occupied by scroll-work—

শ্রী শ্রীযুত য  
শোমাণিক্য দে  
ব শ্রীলক্ষ্মীগো  
বী মহাদেবো।

*Reverse*.—In a circle, within a ring of small circles, with centres marked by points, as in the previous coin.

The rampant lion running to proper right is much smaller than usual, while the upper portion of the circle is occupied by the figure of Kṛiṣṇa playing on a flute; two females stand on either side each with a hand raised towards Kṛiṣṇa.

Between the circumference of the circle and the female figure to the proper right	..	..	শ
--	----	----	---

Between the fore paws of the lion	..	..	ক ১৫
Between the hind paws	..	..	২২

The appearance of Kṛiṣṇa, with female figures, on the coin bespeaks Yaśo-māṇikya's devotion to Kṛiṣṇa and agrees well with the statement of the Rājamālā (p. 76), that he died in Vrindāvana, worshipping Viṣṇu.<sup>1</sup>

(4) Coin of Ratna-māṇikya, grandson of Govinda-māṇikya. Fig. 4.

Silver. *Weight*, 163 grs. *Size*, .94. *Date*, 1607 S.

*Obverse*.—Within a square, open at the top, the space there

<sup>1</sup> Five more coins of Yaśo-māṇikya have recently been presented to the Dacca Museum Cabinet by Brajendra Babu. Each of them has slight variations in the obverse and reverse legends. The date is the same on all of them, viz., 1522 Śaka.

being occupied by the letters শিবঃ, with the representation of a trident between the two letters—

কালিকা পদ  
পদ্মধূপ  
শ্রী শ্রীযুত রত্ন  
দানিক্য দেবঃ .

The margins are occupied by scroll-work.

*Reverse.*—In a circle, within a ring of small circles, with centres marked by points, grotesque lion running to proper right, with a trident fixed on its back—

Between the fore paws .. শক  
Between the hind paws .. ১৬  
Between the tail and the hindmost paw .. ০৭ .

I annex a pedigree, showing the relationship and the dates of the kings dealt with.

Name of king.	Date given in Rājamālā.	Date from coins.
Rājadhara ..	1533-35 S. ..	1508 S.
Yaśodhara, son of Rājadhara.	1535-47 S. ..	1522 S.
Kalyāṇa, distant cousin of Yaśodhara.	1547-1581 S. ..	1548 S.
Govinda, son of Kalyāṇa	1581-82 S. ..	1581 S.
Chhatra, 2nd son of Kalyāṇa.	1582-87 S. ..	1582 S.
Govinda (2nd time) ..	1587-1591 S. ..	(Rājamālā, p. 86) ....
Rāmadeva, son of Govinda.	1591-1604 S. ..	....
Ratna, son of Rāmadeva (minor).	1604-1605 S. ..	....
Narendra, son of Govinda (usurper).	1605-1606 S. ..	....
Ratna (2nd time) ..	1606-1634 S. ..	1607 S.

Coins were usually struck in Tippera on the accession of a new sovereign and this custom is still followed. Some of the dates found on the coins may, therefore, represent the initial years of each sovereign.<sup>1</sup>

*Dacca Museum:*  
*The 16th Jan., 1921.*

N. K. BHATTASALI.

<sup>1</sup> I have received some valuable suggestions regarding the reading of dates on the coins from Mr. R. Burn, I.C.S., and I record here my grateful appreciation of his assistance.

## 239. NOTES ON THE GUPTA AND LATER GUPTA COINAGE.

1. *Coins of Samāchāra Deva.*

A copper-plate inscription of a king of Eastern India, who is called Samāchāra Deva on the plate, was discovered in 1909 in the village of Ghugrāhāti, under the Kotālipādā Police Station of the Faridpūr district of Bengal. It was edited by Mr. R. D. Banerji, M.A., of the Archaeological Survey in J.A.S.B., August 1910. Mr. Banerji tried to prove that the grant was spurious, while Mr. Pargiter contended that it was a perfectly genuine one (J.A.S.B., 1911, June and August). The late Dr. Bloch ridiculed the idea of a king with such a curious name as Samāchāra,—“Mr. Decency.” (A.S.R., 1907-8, p. 256.) As a result, Samāchāra Deva's existence and identity can hardly be said to have yet been satisfactorily established, and any new light on the subject may be welcome. Now, did Samāchāra Deva actually live and reign? Mr. Pargiter has already answered this question. “Even if the grant were spurious, no forger would be so foolish as to date it in the reign of a king who never existed.” (J.A.S.B., August 1911, p. 499.) Fortunately, we can adduce stronger proofs of his existence than mere reasons—proofs which have been actually in the hands of previous writers, though no one has ever suspected their existence hitherto. I refer to the two coins, described as ‘uncertain’ on pp. 120 and 122 of the I.M.C., Vol. I, and illustrated as Nos. 11 and 13 on Plate XVI. They are both of gold (considerably alloyed with silver). One of them, of the *Rājātilā* or the ‘throned king’ type, was found on the banks of the Arunḁhālī river, near Muḁammadpūr, in the Jessore district of Bengal. It was found along with a gold coin of Śaśāṅka and another gold coin of the light-weight “Imitation Gupta” type, as well as silver coins of Chandragupta, Skandagupta, and Kumāragupta. (Allan, Catalogue of Gupta Coins, Introduction, Section 171; and J.A.S.B., 1852, Plate XII.) The provenance of the other coin is unknown. It is of the common ‘archer type’ of the Gupta coins. The king's name occurs below the right arm of the king, but Dr. V. A. Smith did not venture on a reading. A letter occurs between the feet of the king which Dr. Smith recognised as *Cha*. The reverse legend he recognised as *Narendra-vinata*, with some hesitation. Of the *Rājātilā* coin, he read the name of the king on the obverse as *Yamādha*, written in characters of the close of the sixth century, and the reverse legend as *Narendrāditya*. Mr. Allan in his “Catalogue of Gupta Coins” attributes the ‘archer type’ coin to a period earlier than that of Śaśāṅka (Introd., p. lxi); and from the supplanting of the Garuḁa standard of the Guptas by the Bull standard on this coin, surmises that the coin was that of a devout *Saiva*. The king's name he reads hesitatingly (Section 165) as *Sahā* or

*Samācha* or *Yamācha*, and thus desires to connect it with the *Rājātilā* coin, on which he reads the king's name as *Yamādha*. The reverse legend he reads on both the coins as *Nareन्द्रāditya*.

In the Report of the Archæological Survey of India for 1913-14, Mr. R. D. Banerji discusses these two coins again: and after a careful study he comes to the conclusion that the name of the king on the obverse of both the coins is the same, viz. *Yama*. The reverse legend is read as *Nareन्द्रavinata*.

A careful study of the two coins will, I believe, convince any scholar, that the name of the king is the same on both the coins, and that it cannot be read as anything else than *Samāchā*; and the reading is confirmed now that we know of the existence of a contemporary king, *Samāchāra Deva* by name, whose copper-plate inscription was discovered not far<sup>1</sup> from the find spot of one of these coins (the *Rājātilā* coin), and the lettering of whose name, as written on his copper-plate, closely agrees with the lettering on these coins. The coins may therefore be assigned to the *Samāchāra Deva* of the *Ghugrāhāti* plate; and they in their turn furnish proofs, hitherto wanting, of his existence and reign, and of the genuineness of the *Ghugrāhāti* plate. These coins may be described thus:

(1) Coin of *Samāchāra Deva*.

*Metal*, alloyed gold. *Weight*, 148.2 grs. *Size*, .9. *Provenance* unknown.

*Obverse*.—The King, a powerful figure in traditional Gupta dress, standing in *Tribhāṅga* pose. A halo is seen round the head and he looks to his own right; to the left of the head curls are shown. A necklace of pearls or golden beads is prominent round the king's neck. A bow is shown in the left hand, while the right hand is offering incense at the altar. Below the left hand, in characters of the close of the sixth century A.D. *Samā*, between the feet *chā* and above the bull of the standard, probably *ra*. The first *ā* in *mā* is a superscript angular stroke, and the second *ā* in *chā* is a short perpendicular stroke to the proper left, exactly as found on the *Ghugrāhāti* plate of *Samāchāra Deva*; but in this plate *chā* has the angular stroke and *mā* the perpendicular one. These methods of marking *ā* appear to have been indiscriminate.

To the right of the king appears a standard firmly planted on the ground surmounted by a bull. The Bull standard unmistakably shows that the king was a devout Śaiva.

*Reverse*.—A goddess, nimbate, seated on a full blown

<sup>1</sup> The distance between Muhammadpūr and *Ghugrāhāti* is about 30 miles, the latter being to the S.E.S. of the former.

lotus. She has a lotus bud with a stalk in her left hand, and a noose in the right hand. To the right of the head of the goddess, what appears to be an indistinct monogram is seen, and on the left margin occurs the legend *Narendravinata*, in blurred characters.

(2) Coin of Samāchāra Deva

*Metal*, alloyed gold, slightly purer than No. 1. *Weight*, 149 grs. *Size*, '8.

*Obverse*.—The king, nimbate, sits on a couch in (for coins) unique *rājatilā* pose, and looks to his right. His left hand is raised, apparently touching the chin of the female figure standing to the left, or pointing to the lettering above, composing the first two letters of his name. The right hand is placed on the hip in a manner which, taken with the pose of the head, seems to express indifference or defiance to the female figure standing to the right, though the meaning of the pose is not very clear. Above the pointing left hand occurs *Samā*, below the couch *chā*, and beneath the feet of the female figure to the right of the king, *ra*.

*Reverse*.—The goddess Sarasvatī,<sup>1</sup> nimbate, stands in a lotus bed in *Tribhāṅga* pose, looking to her right, the left hand resting on a lotus with a bent stalk, while the goddess draws another lotus to her face (as if to smell it) with her right hand. A lotus bud is on a stalk below the bend of the right hand; below which again is a *hamsa* (swan), with neck stretched upwards. Two fan-like lotus leaves are visible on the two edges of the coin. On the left margin occurs the legend *Narendravinata*. The reverse type is also unique.

Some conclusions force themselves upon the careful observer of these two coins:—

(1) The King was certainly not of the Gupta lineage, though he may well have been a successor of the Guptas, in the dominions where the Guptas had once held sway.

(2) Samāchāra must, on palaeographic grounds, be placed earlier than Śaśāṅka in chronology; also there is no place for Samāchāra in chronology after Śaśāṅka, whose immediate successors in Eastern India were Āditya Sena and his descendants in the west and the Khudgas in the east.

(3) He was a devout Śaiva. The continuance of the Bull symbol by Śaśāṅka, as well as the facts: (a) that the *Rājatilā* coin was found with a coin of Śaśāṅka and (b) that Śaśāṅka's lineage and parentage have never yet been satisfactorily established, make it almost certain that Samāchāra was a predecessor of Śaśāṅka in the kingdom of Gauda, and of the same lineage, possibly his father.

<sup>1</sup> Allan calls the figure Lakṣmī, but *Hamsa*, the swan, is ordinarily associated only with the goddess of learning, Sarasvatī.

(4) The *Rājāhīlā* coin may be later than the other coin, as it shows a distinct change from the almost conventional type of the latter.

## 2. Gupta and Later Gupta Gold Coins from East Bengal.

A large number of these coins have been found in different parts of East Bengal, notably in Kotalipādā in the Farīdpūr district and in Sābhār in the Dacca district. The Dacca Museum may now claim to have the largest collection of later Gupta gold coins, there being as many as eight of these coins in its cabinet.

The coins are described below :

(1) Gold coin of Chandra Gupta II, discovered at the village of Guākhola, about three quarters of a mile west of the south-west corner of the fort at Kotalipādā, in a field locally known as Sonākānduri. *Weight*, 127.5 grains. *Size*, .8. Now in the Dacca Museum. Presented by Babu Nibaran Chandra Chakravarti.

*Obverse*.—King nimbate, looking to his right, a bow in the left hand and an arrow held near its head in the right. Standard surmounted by Garuḍa visible on the back-ground between the arrow and the king. Below the left arm, *Chandra*, written vertically.

*Reverse*.—Goddess, nimbate, seated on a lotus throne, within a circle of dots. A flower with a long stalk in her left hand and a noose in her right. On the left margin of the coin, in a straight line, *Śrīvikramah*.

(2) Gold coin of Skanda Gupta : found in the same place as No. 1. *Weight*, 142.3. *Size*, .86.

*Obverse*.—King nimbate, looking to his right ; a bow hanging from the left wrist, right hand placed over the point of an arrow, the fingers slightly raised as if assuring *abhaya* (protection). The Garuḍa standard on his right, from which a pennon is floating in the air. Below the left arm, *Skanda*. To the right of the face the *y* of *tya* visible. On the left margin (*pa*) *rahitakāri* — — o.

*Reverse*.—Goddess nimbate, sitting on a lotus seat, stalked flower in left hand, noose in the right. Legend on the margin, *Kramaditya*.

Belonging to Babu Ramesh Chandra Sen, Head Clerk, Madaripur Municipality.

(3) Gold coin of Skanda Gupta. *Weight*, 141.5. *Size*, .86. Found in the same place as Nos. 1 and 2.

*Obverse*.—Same as No. 2 : *tyah* visible to the right of the king's face. Legend in the left margin (*pa*) *rahitakā* ....

*Reverse*.—Same as No. 2.

Belonging to Hon'ble Sjt. Ambica Charan Mazumdar of Farīdpūr.

(10) Another coin of the same type and material, but better executed. *Weight*, 84. *Size*, 76. Found at Sābhār.

It resembles No. 5 in having what appears to be *Śrī Kramā* below the left arm of the king. The find of a second specimen of this class confirms the supposition that these are actual letters, though the reading is still doubtful. A monogram resembling a four-bladed fan appears to the proper right of the king's head. The goddess on the reverse appears to be eight-armed which is perhaps her correct appearance, the debasement of the later coins being responsible for her appearance with six arms.

(11) Another coin of the same type. *Metal*, alloyed gold. *Weight*, 86.8. *Size*, 75. Found in a village under the Lāksām police station of the Tippera district.

*Obverse*.—Sharply executed. Standard S-shaped. A very prominent *Śrī* below the left arm of the king and another less prominent to the proper right of his head.

*Reverse*.—The same goddess, six-armed: garland prominent.

### 3. *The Origin of the 'Imitation Gupta' Coins.*

In order to attempt an attribution of these light-weight coins in imitation of Gupta types, it will be well to take note of other coins of this class noticed elsewhere.

(12) B.M.C., Gupta Dynasties, J. Allan, p. 154, No. 620. *Metal*, base gold. *Weight*, 86.5 grs. *Size*, 85.

A dagger-like thing in the right hand of the king; standard, spiral-headed like our No. 4. But a distinct *Śrī* to the right of king's face and a horse below his left arm. Eight-armed goddess on the reverse like No. 4, holding a tapering fruit in proper right hand: rude legend on the left margin, *Sudhanyā*. The horse suggests a claim on the part of the king who issued the coin to universal sovereignty by the performance of a horse-sacrifice.

(13) Ibid, No. 621. *Metal*, base gold. *Weight*, 92.5. *Size*, 85.

Standard the same as in above; king's right hand plucking at the arrow (or sword-hilt?) on his right. The same eight-armed goddess on the reverse, with the fruit in proper right hand. The legend on the left margin more distinct, and appears to read *Śrī Sudhanyāditya*.

(14) Ibid, No. 622. *Metal*, base gold. *Weight*, 81.7. *Size*, 85.

Similar to the above. Crescent between king and standard. Legend on the reverse *Sudhanyā*.

(15) Archaeological Survey Report, 1913-14, Notes on Indian Numismatics, R. D. Banerji, p. 258. Imitation Gupta coin of base gold. *Weight*, 83.3. *Size*, 9. Found with a coin of Saśāṅka and another coin of Samāchāra Deva (the

*Rājātilā* coin, already described), as well as some silver coins of the Imperial Guptas, near Muḥammadpūr in Jessore.

Exactly like No. 12 above. Legend on the reverse the same: suggestive of a horse-sacrifice.

(16) Ibid. Imitation Gupta coin of base gold. *Weight*, .85. *Size*, .9. Found in the Bogra district (in Mahāsthān?), and now in the possession of Babu Mrityuñjay Ray Chaudhuri, Zamindar of Sadya-puṣkarinī in the Rangpūr district of Bengal.

The outline of the king's figure rather distinct, the execution of the bow in the king's left hand very good. A letter or monogram appears between the standard and the king's face. Mr. Banerji reads it as *pa*. A stroke like *ra* appears between the bow and the king's waist. The figure of the eight-armed goddess in a circle within the circle of dots. Legend the same, *Sudhanyā*.

(17) J.A.S.B., April, 1910, pp. 142-143, History and Ethnology of North-eastern India, by Mr. H. E. Stapleton. Imitation Gupta coin of base gold. *Weight*, 87.6. *Size*, .8. Found in Maneśvar, in the western suburbs of Dacca.

No lettering on the obverse. The same eight-armed goddess on the reverse and apparently the same legend.

(18) Ibid. Imitation Gupta coin of base gold. *Weight*, 88.3. *Size*, .88. Provenance unknown, but probably somewhere in the Dacca district.

Exactly like No. 12 above. *Śrī* between the king's face and standard, and horse below his left arm as in Nos 14 and 15. The same eight-armed goddess on the reverse and apparently the same legend.

(19) History of Vikramapura (in Bengali), by Babu Jogenra Nath Gupta, First edition, p. 69. Imitation Gupta coin of base gold. *Weight* and *Size*, not recorded. Appears to be like our No. 6. I have seen two more coins of this class, one in the Nāhār collection at 45, Indian Mirror Street, Calcutta, and the other in the possession of Rai Mani Lal Nāhār Bahadur of 5, Indian Mirror Street, Calcutta. I was told that these two coins were procured by purchase from Lucknow.

Allan (ibid. § 127) is of opinion that these are undoubtedly ancient coins. "These coins are connected by weight and by the border of large dots with the coin of Śaśāṅka illustrated on Plate XXIV, 2, and must be dated about the middle of the 7th century A.D. We have considerable evidence that these are actual coins which circulated in Eastern Bengal, probably about the 7th century A.D." Mr. Stapleton also is of opinion that they were Bengal coins of a somewhat later date than Skandagupta. (J.A.S.B., April, 1910, p. 143, foot-note.)

The following comparative study of the weights of the coins is interesting :—

No. 4	..	85.4 grains.	No. 12	..	86.5 grains.
" 5	..	87 "	" 13	..	92.5 "
" 6	..	86.9 "	" 14	..	81.7 "
" 7	..	75 "	" 15	..	83.3 "
" 8	..	87.5 "	" 16	..	85 "
" 9	..	86.5 "	" 17	..	87.6 "
" 10	..	84 "	" 18	..	88.3 "
" 11	..	86.8 "			

It appears pretty clear from the above that these coins were struck on the 50 *rati* or half *Suvarṇa* standard, of a *rati* of about  $1\frac{1}{16}$  grain, i.e. an original weight of about 95 grains. From Śaśāṅka's coin referred to by Allan above, which weighs 85 grains, and from a coin of Kācha (Samudragupta ?) of debased gold (I.M.C., Vol I, p. 102, Kācha No. 2, foot-note No. 2), which weighs 87.4, it appears that the standard was not unknown, but very seldom used. The coin of Śaśāṅka seems to have been the immediate prototype of these coins. The following facts regarding these coins may be emphasised :—

(a) These were undoubtedly East Indian coins, and had circulation only in Eastern India.

(b) They are inter-connected by weight, by the border of large dots on the two sides, and the figure of the eight-armed standing goddess looking to her left, on the reverse; consequently, they were issued by the same family or in the same period.

(c) They cannot be attributed to any of the Imperial Guptas, even to the last kings of the line, or to Samāchāra Deva or Śaśāṅka. The crude execution and the figure of the goddess on the reverse, the uniform light weight,—all tell against this.

(d) They imitate Gupta coins and were probably issued by a family, who had veneration for Gupta traditions, and meant to keep them up. The spiral standard in place of the Garuḍa standard and the substitution of the eight-armed goddess on the reverse show, however, that the family was not connected with the Imperial Guptas.

(e) They were not issued by the Pālas or the Senas of Bengal, as, apart from the fact that no coins that can be attributed to them are known, no one of these coins, except the one illustrated in the History of Vikramapura (found in Rampal, the ancient capital of the Senas), was found near the ancient seats of the Pālas or Senas. Moreover it is not probable that these coins are so late. The few letters that appear on them, here and there, appear to be older in form than the letters on the earliest Pāla inscriptions.

(f) They cannot be attributed to Harṣavardhana, as his coins are known, and these coins do not resemble them in any way.

(g) The horse-sacrifice class of these coins was evidently issued by a king, who claimed paramount power and had celebrated a horse-sacrifice.

(h) One of these horse sacrifice coins was found with both a coin of Śaśāṅka and one of the Samāchāra Deva. Judging from the debased character of these coins, it would appear that they were issued by a king, who claimed paramount power and who had celebrated a horse-sacrifice after the disappearance of Harṣavardhana and Śaśāṅka from the political arena.

The only reasonable conclusion that can be deduced from the above points is, that the dynasty that satisfies all these conditions is the Gupta dynasty of Magadha, whose first king, Āditya Sena Deva, rose to paramount power in Eastern India immediately after the death of Harṣavardhana and celebrated a horse-sacrifice. The Deoghar inscription which mentions this king (Fleet, p. 213), though much later in date, is evidently based on a contemporary inscription, and appears to record a genuine tradition about him. It says that Āditya Sena was the performer of the Āśvamedha and other sacrifices: that he, having returned from the Chola country, performed three Āśvamedha sacrifices and consecrated a temple at the expense of three lakhs of *tankakas* of gold.

The origin of the Gupta kings of Magadha is traced from one Kriṣṇa Gupta in the Āpshad inscription of Āditya Sena (Fleet, No. 42). This line had matrimonial alliances with the Vardhana and the Maukhari kings, Prabhakara Vardhana being son of Mahāsena Guptā, sister of Mahāsena Gupta. Mahāsena's son was Madhava, who threw in his lot with his nephew Harṣavardhana, and Madhava's son was Āditya Sena. Kriṣṇa Gupta, eighth in ascent from Āditya Sena, it has been suggested, was identical with Govinda Gupta (R. D. Banerji, History of Bengal, Part I, p. 76), second son of Chandra Gupta II; but except that the name Kriṣṇa and Govinda are synonymous, and the fact that the time of Krishna Gupta may be pushed back to the time of Govinda Gupta, there is no other ground for the identification.

The Deoghar inscription says that Āditya Sena spent three lakhs of gold *tankakas* in consecrating a temple. The meaning of the word *tankaka* is given in the Dictionary as "a stamped coin, especially of silver"; "a weight of silver equal to four *māśās*." Four *māśās* are equal to only 32 *ratīs*, or about 56 grains, the standard weight of the punch-marked silver coins of India. The gold coins of the Imitation Gupta type are of course heavier, but the use of the word *tankaka*, ordinarily employed for silver coins, in the statement that three lakhs of gold *tankakas* were expended, possibly shows that the writer meant to denote these light-weight gold coins, current during the time of the Guptas of Magadha, and

it was perhaps by this name that these coins were known in contemporary times.

The fall of the Guptas of Magadha was followed by a century-long anarchy in Eastern India, during which the debasement of the type went on until it finally became extinct. In the long drawn agony, all civilised arts and crafts were forgotten, including the art of striking coins, and, in consequence, we meet with the unique spectacle of a country doing without any minted money whatever for four long centuries; for it has yet to be proved that the Pālas and the Senas struck coins. We have the evidence of the *Ṭabaqāt-i-Nāṣiri* that the Muhammadans, on their first entry into Bengal, saw no other currency in the country except *cowrie* shells, which they found sufficing for all transactions of life. The contemporary Tibetan account of the adventures of the Tibetan scholar, who was sent by the king of Tibet to take Atiśa Dipaṅkara to Tibet, translated by the late Rai Sarat Chandra Das Bahadur, in his "Indian Pandits in the Land of Snow," records an interesting picture of monastic life during the rule of Nayapāla in 1040 A.D. It shows that all monetary transactions were made in gold measured out in small quantities and in cowries. No minted money is referred to anywhere in the narrative.

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#### 240. PERSIAN COUPLETS ON THE MUGHAL AND SUBSEQUENT COINAGES.

The couplets inscribed on the coins of the Mughal Emperors are often the merest trash when considered as poetry but they are not, for all that, altogether devoid of interest or utility. They illustrate the overweening conceit and self-esteem of these rulers and the servility and adulation of the court poets. At the same time, the metrical arrangement and rhythm often makes it easy for us to supply on worn, crudely executed or otherwise defective specimens, letters and even words which are but partially visible. But though the metrical nature of the legends is universally acknowledged, and the individual words have in almost all cases been deciphered correctly, they have not always been ordered in our catalogues as the rules of Persian prosody require.

It is now more than fifty years since Blochmann drew attention to this shortcoming in Marsden's *Numismata*, and showed how "necessary it was even for numismaticians to take care of the *Ars Poetica*, when describing the coins of the Moghul dynasty of India and the Qafawis of Persia" (*Proceedings A.S.B.*, 1869, p. 260). More recently, Mr. John Allan has laid stress on the same point in connection with the metrical inscriptions on the coins of the Guptas. He has not

only stated in each case whether the line is an *Upagiti*, *Prithvi* or a *Vamshasthavila* verse, but employed the metre as the clue to the determination of many doubtful questions, and constituted it the *ultima ratio* for judging the soundness of emendations and proposals for the restoration of the text (Catalogue of the Coins of the Gupta Dynasties, 1914, Introd., pp. cvii-cxxiv).

C. J. Rodgers was on his guard against this pitfall, and thought it necessary to consult two competent Maulavis of the Calcutta Madrasa (J.A.S.B., 1888, pp. 18, 27, Notes), who would appear to have furnished him with the true order, as well as the correct renderings of the distichs. Mr. Stanley Lane-Poole also admits having availed himself of the assistance of Dr. Rieu in regard to this matter (B.M.C., Introd., cxix). It is to be regretted that there are no traces of this punctilious regard for metrical correctness in the three latest catalogues of Mughal coins, and that the ordering of the words in them leaves considerable room for improvement. I shall, for the sake of brevity, take only the most recent one—the excellent compilation of Mr. Brown—to whose industry we are indebted for an exhaustive list of all such ‘Baits’ as have been discovered. They are just eighty in number, but the order of the words in the first hemistichs of at least fifteen of them is demonstrably erroneous, and the second line also of one distich is metrically unsatisfactory. About seven of them (Nos. 47, 60, 66, 69, 71, 75 and 79) which are correctly given in Rodgers’ article (J.A.S.B., 1888, pp. 18–31), and the rectification of which offers no difficulty, I shall say nothing. I will deal only with the eight or nine couplets which have been discovered since he wrote.

For instance, No. 20 should be :

باردو سکه در راه دکن زد شاه بحر و بر  
شهنشاه زمان شاه جهانگیر ابن شاه اکبر

Each line consists of four *مفاعیلون* and the metre is *Hajaz-i-Muḡamman-i-Sālim*.

In the second line of No. 40, the insertion of the word شاه before نورالدین and the substitution of بادشاه for شاه is obviously required to make the line conform to the rules of scansion.

The metre of No. 51 is exactly the same as that of No. 20, as is obvious from the fact that the second hemistich of both are absolutely identical. It consists of four *مفاعیلون*, and the couplet therefore *must* read

بماندو سکه فتح دکن زد شاه بحر و بر  
شهنشاه زمان شاه جهانگیر ابن شاه اکبر

I have said that the metrical arrangement of the legend is often helpful in enabling us to reconstruct or restore the couplet, when all the words have not come on the coin. This is well exemplified by No. 61. The second hemistich which is complete shows, the metre is *Hajaz-i-Muṣaddas i-Maqṣūr* or *Mahzūf* مفاعيلن مفاعيلن مفاعيلن. The first line, therefore, cannot possibly be سکه زد چو صاحب قران. It is not difficult to say what it ought to be, as the second line of No. 61 is بهادر شاه عالم گیر ثانی. That of No. 63 is

معظم شاه عالم گیر ثانی

and that of No. 75

عزیز الدین عالم گیر ثانی

Every word of the first line is inscribed clearly and may be read by any one on the obverse of P.M.C., 2839. There is, therefore, no room whatever for hesitation on the question, and it may be said with confidence that the first lines of Nos. 61, 63 and 75 *must be identical*. But the order of the words as given in Mr. Whitehead's catalogue (P.M.C., Nos. 2091 and 2766) and followed by Mr. Brown,

سکه برد چون صاحب قرانی

must be rejected for metrical reasons. The line will scan only if it is read

برزد سکه چون صاحب قرانی

The variant given by Beale (*Miftāḥu-t-Tawārīkh*, Lucknow Lith., 1867 A.C., p. 341, 1, 2)

برزد سکه صاحب قرانی

is equally correct, but چون is distinctly visible on P.M.C., No. 2839, and must consequently be accepted as part of the original verse. Similarly, the rules of Persian prosody enable us to assert, without fear of challenge, that the first lines of Nos. 62 and 64 *must be identical*, although the word *Multān* has not come off on the Multān rupee in Mr. Nelson Wrights' cabinet. The metre is *Ramal-i-Muṣamman-i-Mahzūf* مفاعلاتن فاعلاتن فاعلاتن فاعلاتن as is proved by the second lines. The word مبارک therefore has to be supplied. Here again, the ordering of the words of the first line is metrically false. It should be—

سکه زد بر هفت کشور بر مبارک مهر و ماله

Lastly the metre of No. 77 is *Muḥṭas-i-Muṣamman Makḥbūn-i-*

*Mahzūf*

مفاعلاتن مفاعلاتن فاعلاتن

The second line, which is correctly given, leaves no room for doubt on that head. The first line, therefore, should read

بیافت سکه زر رونق چو مهر منیر

The initial ب is not visible but the exigencies of metre demand its restoration. The line will scan only with an *izā/al* after رونق.

In this list of coin couplets, Mr. Brown says that there is a variant of No. 69 "on a gold coin of Mu'azzamabad (B.M.C., No. 937 a) which has not yet been elucidated," and Mr. Whitehead has made a similar remark (P.M.C., Introd., p. c). I venture to say that the difficulty is but apparent, and has arisen only on account of the words of the first line of the *usual* couplet having been ordered wrongly. When this primary error in regard to the ordinary type is corrected, the halt in the variant is not so easily perceptible. The matter stands thus: This ordinary line was read

سکه زد بهند با هزاران برکات

This is wrong, though it does not sound false to the untrained ear. But

سکه نصر زد بهند با هزاران برکات

clearly does, and hence the doubt. If the ordinary hemistich had been read *rightly in the first instance*, as

زد سکه بهند با هزاران برکات

the variant would have automatically taken the form

زد سکه نصر با هزاران برکات

There would then have been no obvious dissonance and consequently no difficulty.

Mr. Brown appears to have entertained doubts as to the correctness of No. 39 also,—the distich inscribed on an unpublished rupee in his own cabinet, and says that the reading is tentative. I may assure him that it is metrically unexceptionable. The metre is *Sarī'a-i-Muṣaddas-i-Matwī-i-Mauqūf*.<sup>1</sup>

Rodgers admitted his inability to arrange properly the Mandū gold-couplet (No. 50). The first line, as he has ordered

<sup>1</sup> This coin was read for me by Maulvi 'Ali Asghar of Canning College, Lucknow. He recognised the metre and constructed the legend accordingly. But the reading was wrong nevertheless; for the word he took to be زد (not clear in my coin) is actually ابد, which appears quite distinctly on a coin now in the possession of Mr. H. Nelson Wright. So the first line of couplet now reads

تا ابد از نام جهانگیر شاه

it, yields sense, but it will not scan and he appears to have known it. The truth is that the measure is one of those

rarely used, viz., مفعول فاعلات متفاعيل فاعلان

and the metre that which is known in books on Persian prosody as *Muṣar'ā-i-Akhrab-i-Maqṣūr*. In the circumstances, the correct reading of the distich must be

پرتو دهد بنور جهانی چون مهر و ماه  
سکه مندوز نام جهانگیر شاه

No. 70 is another difficult couplet, and I am unwilling to say anything positive about it, as the coin itself has not been figured. But as the metre is, in all probability, *Ramal-i-Muṣaddas-i-Maqṣūr* فاعلاتن فاعلاتن فاعلان, the true order of the words must be as follows :

سکه با امن و امان زد درجهان  
ثانی صاحب قران شاه جهان

Before leaving the subject, it may be as well to point out some minor mistakes or oversights. In No. 10, این is a typographical or clerical error for زیب. The first word of the first line of Nos. 8 and 41 is جهان فیروز (not جهان فیروز); and should, in both cases, be rendered by some such phrase as "world-illuminating." In the second hemistich of No. 18, the *ali* of the initial word از is redundant and should be deleted, and the word شاه should be added, so that the line would read, like the closely parallel verse (No. 35)

ز نقش نام جهانگیر شاه شاه اکبر

In No. 47, مالک is a misprint for ملک and the words are best ordered as

پناه ملک دین شاه جهانگیر ابن شاه اکبر

Permit me to give one more instance. On the muhrs and rupees of Tipū Sulṭān, the following words have been deciphered :

دین احمد درجهان روشن است ز فتح حیدر

and the rendering offered by Dr. Taylor is, 'The religion of Ahmad is illumined in the world by the victory of Haidar' (Coins of Tipū Sulṭān, p. 24). This is an improvement of the old Latin version of Marsden as well as the more recent English paraphrase of Capt. Tufnell (Catalogue of Mysore Coins, 1889, No. 112), but it still leaves much to be desired in the way of accuracy.

In the first place, the legend is metrical, and the words should be ordered on the measure

فاعلاتن فاعلاتن فاعلاتن

the metre being *Ramāl-i-Muṣamman-i-Maqṣūr*. The true reading therefore must be

دین احمد در جهان روشن ز فتح حیدر است

In the second, the translation also is not quite correct. فتح here is not a common noun governing حیدر but a part of the name of Haidar 'Ali himself, to whom his son appears to have been desirous to pay a compliment after death.

Mr. Bowring informs us that the name of Haidar's father was *Fath* Muhammad (Haidar Ali and Tipu Sultan, p. 12). We are further told that the Peshwā Bālājī Rāo invaded Mysore in 1757 A.C. and sent in 1759, a force under Gopāl Hari to annex the districts, surrendered in pledge, for the ransom of thirty-two lakhs, which had been promised, but the payment of which was subsequently evaded. Haidar was now placed in command of the Mysore army, and his energetic and skilful strategy compelled Gopal not only "to abandon the blockade of Bangalore but to withdraw his troops from the pledged districts and come to terms." On the departure of the Marāthās, "Haidar \* \* \* received from the grateful Rāja the title of *Fatah Haidar Bahadur* in recognition of his services on this occasion. This style he invariably used afterwards on all grants made by him. Previously he had been known simply as Haidar Nayak." (Ibid, 30.)

This is not all. The legend itself is an imitation or reminiscence of the first line of the couplet inscribed on Haidar's public or "Great Seal." According to the contemporary biographer Mir Husain 'Ali Kirmānī, this was as under:—

بهر تسخیر جهان شد فتح حیدر آشکار  
لافتی الا علی لا سیف الا ذو الفقار

"*Futteh Hydur* was manifested or born to conquer the world. There is no man equal to Ali and no sword like his (recte, like Zulfikar)." <sup>1</sup> His pocket seal bore the words, فتح حیدر (History of Hydur Naik, Tr. W. Miles, Orient. Trans. Fund, 1842, p. 491).

Now there is no room, here at least, for doubt or amphibology. It would be impossible to take the فتح on this

<sup>1</sup> The inscription on the Seal is also given by Beale, *Miftāhu-t-Tawārikh*, (Kāhnpur Lithograph, 1284 A.H.) p. 370.

inscription as a common noun, and absurd to translate it as "the victory of Haidar was manifested or born to conquer the world." This clinches the question and it is quite clear that the coin-legend should be translated thus: "The Faith of Ahmad (i.e. Muhammad) has received lustre from (or been illumined or glorified by) *Fath Haidar* in the world."

But if the building up of these metrical legends is often difficult, their correct interpretation is at times no easy task. To give an instance, the rendering of the Jammū rupee-couplet which was first given by Rodgers (J.A.S.B., 1885, p. 66; also J.A.S.B., 1888, p. 33), and which has been transcribed into his own catalogue by Mr. Whitehead is, to my mind, absolutely indefensible. The Persian distich is—

خانہ رنجیت دیو آباد کرد  
لیچمی ناراین دل شاد کرد

and Rodgers translates it thus :—

"Ranjit Deo peopled this part,  
Lachmi Narain made glad its heart."

The English words hardly yield any sense, and are at best only "sounds signifying nothing." But if they mean that the city or district of Jammū was first peopled by Ranjit Deo, it is historically false. The antiquity of Jammū and its long line of kings is matter of common knowledge. Their indigenous chronicles are summarised and can be read in Major Smyth's "History of the Reigning Family of Lahore" (pp. 219-263) by any one who cares to do so. *Vide* also Elliot and Dowson, III, 467, 471, 517, 519; IV, 56, 58, 415.

Again خانہ آباد کردن does not mean 'to people a part.' خانہ آباد is a common exclamation or mode of salutation and means according to Steingass, "May you flourish" (Dictionary, s.v.). It seems to me that the order of the lines must be reversed and that the following would be a fairly faithful version in English of the *Bait* :

Lachmi Narāin gladdened hearts,  
And made the family (lit. house) of Ranjit Deo prosperous (or flourishing).

I have elsewhere (Num. Sup. XXXV, p. 57) adduced reasons for holding that Ranjit Deo died in 1781 A.C. His known coins bear the dates 1841 Sambat and XXVIIR. Now the 28th year of Shāh 'Alam II lasted from 5-V-1200 to 4-V-1201 A.H. i.e., from 6th March, 1786, to 22nd February, 1787 A.C. [Mr. Whitehead has 1199-1200 A.H., but this is an error.] Vikram Samvat 1841 commenced on 14th October, 1784 N.S., and ended on 1st November, 1785 N.S. The discrepancy cannot be explained except on the supposition that 28 is an error, for

26 Julūs i.e., 1198-1199 A.H., 26-III-1784 to 15-III-1785. Mr. Whitehead has 28 in one column, but 27 in another. Rodgers has figured three coins, the dates on which are 1841-27; 1841-28; and 1841-28. Can it be that the Samvat date on the 28th Julūs issues has been wrongly read, 1841 for 1843? (Rodgers, J.A.S.B., 1885, Pl. I, Figs. 2-3-4.) In any case these coins, supposed to have been "struck by Ranjīt Deo," must be held to have been issued in his name by his son Brij Rāj Deo or some one else.<sup>1</sup> But this has little or no bearing on the general purport or significance of the verse. The crux of the matter is 'who was this 'Lachhmī Nārāin' and why is he said to have "gladdened hearts etc." I have not been able to discover the name in the list of Ranjīt Deo's ancestors and descendants given by Major Smyth (Op. Cit. p. 18) or quoted by Rodgers from the Urdū *Tārīkh-i-Makhzan-i-Panjāb*, J.A.S.B., 1885, pp. 63, 66.

The only conjecture I can offer is that 'Lacchhimi Nārāin' was the patron deity of Ranjīt Deo's family, and that the object of the striker (whoever he might have been) was to avow his devotion and publicly make his grateful acknowledgments to the god, for the favours bestowed on the Dogrā prince during his chequered and eventful career. It is hardly necessary to labour this point, and the little that is known of the history of Ranjīt Deo will be found in the Num. Supp. article referred to. See also Smyth, *loc. cit.*, 239-247; Journal Punjab Historical Society, Vol. III, 1914, pp. 117-8. It may be pertinent to observe that Vishnū and his consort, Lakshmi, when jointly worshipped, as they very commonly are, in temples specially consecrated to them, receive the name of Lakshmi Nārāyan. The rationale of this adoration is thus stated in the Vishnū Purāna: "Lakshmi, or very commonly Sri, is the wife of Vishnu, and under various names appears in this relation in his various incarnations. "As the lord of the worlds, the god of gods, Janarddana descends amongst mankind in various shapes: so does his coadjutor Sri. Thus, when Hari was born a dwarf, the son of Aditi, Lakshmi appeared from the lotus as Padma, or Kamala; when he was born as Rama (Parasurama) of the race of Bhrigu, she was Dharani; when he was Raghava (Ramchandra), she was Sita; and when he was Krishna, she was Rukmini. In the other descents of Vishnu she was his associate. If he takes a celestial form, she appears as divine; if a mortal, she becomes a mortal too,

<sup>1</sup> Major Smyth says that Brij Rāj Deo died in 1786 A.C. and was succeeded by his son "Sefurin Dehu, a young boy, who after a reign of seventeen or eighteen months died \*\*\* and Jey Sing, the only son of Delele Sing (the second son of Ranjīt Deo) was created Rajah," Op. Cit. 247-8. Later authorities, however, declare that Brij Rāj was "killed in battle in 1797, and was succeeded by his son Sampūran Deo" (Hutchison and Vogel, Journal Punjab Historical Society, Vol. III, 1914, p. 118.)

transforming her own person agreeably to whatever character it pleases Vishnu to assume," (H. H. Wilson, "Vishnū Purāṇa," p. 80).

We learn from the Imperial Gazetteer that the town of Chambā (the capital of a state which was in old times dependent on Kashmīr and connected closely with Jammū) contains a temple of "Lakshmi Narāyan dating possibly from the tenth century" (X, 134): see also *Journal Punjab Historical Society*, 1915, pp. 93 and 88). Kashtwār also, another of the Punjab hill states boasts of a Lakshmi-Narāin temple which is as old at least as the time of Shāh Jahān, and is now the site of the *Ziārat* or tomb of a famous Muhammadan saint (Hutchison and Vogel, *History of Kashtwār State in Journal Punjab Historical Society*, Vol. IV, 1915, p. 42).

In a word, it would appear that Lakshmi Narāyan was one of the favourite deities of the Dogrā Rājputs and this fact would go far towards explaining the allusion in the couplet.

P.S.—Mr. Brown's rendering of the *Bait* inscribed on some rare rupees of Bāndhū (No. 5) also leaves considerable room for improvement. The words themselves are:

رواج سكه الله اكبر  
بود با قلعه باند هو برادر

and the translation offered is:

"May the current coin of Akbar the Divine  
Be equal to (the name of) the fort of Bāndhū."

I venture to say that this cannot be accepted and that it is very far from representing the real meaning of the couplet which seems to be:

"May the Coin [stamped with the words] 'Allāhu Akbar'

Be current as long as the fortress of Bāndhū."

Bāndhū was one of the most formidable strongholds in Hindustān, and Abūl Fazl devotes more than half a page to its description. It was taken only after a siege which lasted for more than eight months in the 42nd year of the reign, 1005 A.H. (*Akbarnāma*, Text, III, 72s), and the point of the lines lies in the prayer that the mintages of Akbar might continue to circulate among men as long as the fortress should stand upon earth.

10th Dec. 1922.

S. H. HODIVALA.

#### 241 THE MINT NAME SITPŪR (SŪRAT).

One of the most tantalizingly obscure of the problems connected with the study of the Mughal mint system is the

determination of the *atelier* which has been variously located at Sitpūr, Sitāpūr, Peshāwar and even Sinor. It is now nearly six years since I suggested to the late Dr. Taylor that these puzzling issues were the products of the Sūrat mint; and I am still inclined to believe that this decipherment (which he expressed his readiness at the time to accept) has more to be said for it than any other that has been suggested, although it may not be incontrovertible or even susceptible of proof.

All the coins of the alleged mint of 'Sitpūr, in our Museums are round, the years being 47, 48 and 49 R. and the month Mihr. I do not think that the curious coincidence of everyone of them having been uttered in one and the same Ilāhī month—Mihr—has received the attention that it deserves. The late Mr. Frāmji Thānāwālā had several round Rupees of "Sitpūr", of two other types, illustrations of four of which are through the kindness of Mr. Vicaji D. Taraporewala reproduced in this supplement. I may observe that on the undoubted issues of the Sūrat mint of 38 R., the terminal letter of the place-name is disjoined or separated from the سور and written *above* it. My submission is that the symbol, which is inscribed just *below* the letters that have been taken to stand for *Sitpūr* is not the ب of ضرب (as has been supposed), but the ت of سورت. The only difference between the square rupees of 38 R. and the round rupees of 47-49 R. is that, in the former this final ت is written *above*, in the latter *below* the سور. The foundation of the error lies in the supposition that this symbol is the ب of ضرب. The untenable character of this assumption is shown by two of the coins illustrated. **Plate III, 2, 4.** In them the ب can be distinctly seen in the lowest part of the field, in the immediate proximity of the ضرب. This ب is visible on only two out of these four rupees—on the two of which the larger diameter permits its coming off on the flan.

It may be also noticed that the decoration of these rupees is unequal. The omission of the superimposed squares and other ornamental features has made it possible for the engraver to add some letters and it has been supposed that the word درب—the denominational epithet especially devised by Akbar for the half rupee—was stamped by error on these whole rupees for two years (47 and 48 R.) by the Mintmaster. One error always begets another. If we take it for granted that the symbol below سور is the ب of ضرب it is impossible to read the other ب except as the terminal letter of درب. But there is no necessity whatever of postulating any such thing.

The true reading of the coins on which the additional letters در are inscribed is ضرب در سورت. I venture to say that

this simple solution removes all difficulties. There is nothing irregular or incorrect in this interposition of ذر between ضرب and the mintname; cf. the Anhirwāla Fattan rupee of 984 A.H., Num. Supp. XXVI, 493. Briefly, the admittedly questionable reading ذر is the inevitable result or corollary of a fundamentally erroneous postulate. The corollary is, on the face of it, startling and incompatible with facts. If we deny the postulate, it falls of itself and our minds are disabused of a double error.

I am aware that there is still one difficulty and as I have no desire to ignore or even slur over it, I will set it out as clearly as I can. The total number of the coins of this mint registered in the catalogues of the British, Indian, Panjab and Lucknow Museums is 14. They are all of one and the same type and of the 48th or 49th Regnal year (Plate III, 3, 5). They all show the same month—Mihr. Mr. Tārāporewālā possesses four more of two other types. On two of them the month and year are identical (Mihr—49) (Plate III, 6) but the flans are smaller and the ornamentation less elaborate. Besides these, there are two specimens of a distinctly different or third type. The flans are as large as those of B.M.C. 177 or I.M.C. 250, but there are three additional letters. One of them is of Mihr 48 R. (Plate III, 4) and apparently a duplicate of the coin in the White King Cabinet (Catalogue, Pt. III, No. 3527). The other is a sub-variety of this type. The mysterious or mystifying additional letters can be clearly read, but the date is 47 Mihr (Plate III, 2).

It is in regard to the last coin that the difficulty arises. On it, the third or last tooth of the *Sīn* is given a turn or twist so as to form the head of what looks like a *Mīm*, and make the letters read *Samūr* or *Simūr*. The tens figure also is written somewhat peculiarly and is so like the usual symbol for 5, that had it not been for the other issues, the date might have been read as 57. (But this is a minor matter.)

It cannot be denied that this coin lends no support to my suggestion and even runs counter to it, but then it runs counter to all the other proposed decipherments also, and the difficulty is far from being so formidable as it appears.

The matter stands thus: We have altogether nineteen rupees of this class. On all of them, except this one, the head of the *Mīm* is conspicuously absent. On everyone of the eighteen others, the name, whatever it may be, is written in one and the same way, and in such a manner as to render the reading *Samūr* or *Simūr* absolutely unthinkable—although these 18 coins belong to *three different types*. In the circumstances, we are driven to one of only two conclusions. Either this particular coin is of a totally different mint and has really nothing to do with the 18 others, although it apparently

resembles them. Or, it is the bungled production of some prentice-workman who was ignorant of Persian or had an imperfect mastery of his graver. In other words, either this coin was uttered by the same mint as the 18 others or it was not. If it was, it is a blunder. If it was not, it can have no bearing on the point at issue. In either case, i.e., whether it is or it is not the only surviving relic or proof of an error, which was corrected in the subsequent issues of 48 and 49, the result is immaterial.

S. H. HODIVALA.

#### 242. THE MINT GOBINDPŪR.

The identification of Gobindpūr with a place, so called, in the subdivision of the same name in Mānbhūm District, Chūtiā Nāgpūr, Bengal, (23° 50' N., 82° 32' E.) seems to be a conjecture founded merely on phonetic resemblance. The place is a mere village which had a population of only 1,293 souls at the census of 1901, and it appears to have been thought worthy of mention in the 'Imperial Gazetteer,' only on account of the recent exploitation of the mineral resources in its neighbourhood. "The Jherriah coal-field lies within the subdivision [of Gobindpūr] and the great growth of the population during the last decade is due to the rapid development of the mining industry." (Imp. Gaz., XII, 180-1.)

The fact of the matter is that the whole region of (Chhotā or) Chūtiā Nāgpūr (*Jhārkhand* or *Jhārkand*, tree-continent, forest region, as it was then called) was never "properly subjugated by the early Aryan invaders, or by the Pathan and Mughal Emperors, or indeed by any outside power until the advent of the British" (Imp. Gaz., X, 329). The whole district was a mere backwater, and there is no mention of the Gobindpūr of Chūtiā Nāgpūr in the *Āin*, the *Akbarnāma* or any other historical work known to me.

Two places of the name of Gobindpūr are entered in Abūl Fazl's account of Todarmal's Rent-roll. Both of them belonged to the *Ṣūba* of Bengal. One of them, called Gobindpūr Akhand, (perhaps to distinguish it from the other) was in the Sarkār of Ghorāghāt and seems to have been an insignificant place, as the revenue derived from it was only 40,675 *dāms*, i.e. about 1,000 Rs. only. The other Gobindpūr, in the Sarkār of Bārbākābād, was a Mahāl of a little more consequence, as the demand of the State from it was 410,635 *dāms*, i.e. 10,000 Rupees. (Jarrett, *Āin*, Trans., II, 135, 137; see also Blochmann, J.A.S.B., 1873, 215.)

Gobindpūr is a very common toponym in India. As many as seven places of that name are entered in the Post Office Guide. There is a Gobindpūr in Dāccā, somewhere near Nabābganj, another in Gāyā, a third in Sylhet, a fourth

in Lyallpūr (Punjab), a fifth in Rāe Bareilly, a sixth in Mānbhūm, and Gobindpūr is also given as the old name of Bhānda. The difficulty here lies in this that all these localities are *equally* insignificant and obscure. They are all, with the single exception of Gobindpūr in Mānbhūm, (the comparative importance of which is demonstrably of very recent origin) Branch Offices, which is in the phraseology of the Department, tantamount to saying that they are mere villages. It does not follow that some one or other of them was not a town of considerable importance in Akbar's day. It probably was, only we cannot prove it. If we knew of any Gobindpūr which could be shown to have been a place of note during the last decade of the sixteenth century, the matter would be considerably simplified. The difficulty is just this that we do not.

S. H. HODIVĀLA.

#### 243. THE MINT NAME KĀNĀN (BAJĀNĀN)

The reading 'Kānān' of the mint-name on a copper coin of Shāh 'Ālam II in the Indian Museum (No. 2492) has been characterised by Mr. Nelson Wright as a "doubtful one." It is to be regretted that this coin reached him "too late for illustration" (I.M.C., II, 299, note). For the plaster cast of the *fulūs* from which the figure in the plate (Plate III, 11) was produced I am indebted to the courtesy of the Trustees of the Indian Museum. There is a drawing of this copper-piece in the 'Catalogue of Indian Coins' compiled by Mr. Rodgers in 1894 also, (Part II, Pl. III). An examination of this illustration seems to show that the name is not Kānān but Bajānān. The two 'Nuqtas' on the extreme right are perfectly distinct. If they are not ornamental and have any connexion with the letters of the mint-name, the reading would appear to stand in need of revision.

The coin is of the 40th year of the reign of Shāh 'Ālam II (1799 A.C.). The ornaments are a quatrefoil of a peculiar type, and "a fish surmounted by a five-pointed leaf." All these three symbols, the quatrefoil (or "cross made by triangular shaped dots"), the fish and the *jhār* are found on two Jaipūr copper coins, described and illustrated by Webb (Currencies of Rāj-pūtāna, p. 79, Pl. VII, Nos. 5 and 6). The first of them is said to have been "struck in the name Shāh 'Ālam" and the second "between the years 1786 and 1806," i.e. about the same time as the coin under discussion.

These coincidences can be scarcely accidental. The family resemblance between the Jaipūr coins and this *fulūs* is undeniable. The difficulty is that no town called 'Bajānān' can be traced on our maps in the state of Jaipūr itself or the neighbourhood.

S. H. HODIVĀLA.

## 244. THE MINT PANJNAGAR (BHUJNAGAR).

In Num. Supp. XXVIII, I made an admittedly tentative attempt to locate an obscure mint-name which had been read as 'Panjnagar' by Rodgers, and acquiesced in by Mr. Whitehead and others, only because it was "not possible to suggest any other."

It was merely the conduct of a forlorn hope and I felt then that the true reading was "still to seek." Indeed, I declared that the attempt had been made only "in the hope of its helping towards" a satisfactory identification *if the reading proved correct*" (Ibid, p. 79).

I have since had the question very frequently under consideration and am inclined to think that in these six minute and beautifully-inscribed, but cryptic symbols lies hidden the name of the capital of the Rāo of Cutch—*Bhujnagar*.

In setting out the reasons which have led me to offer the suggestion, I wish to invite attention to the fact that this curious half-rupee of Jahāngīr has certain points of resemblance to the same emperor's mintages of Aḥmadnagar and Zafarnagar, which are too striking to be ignored. In the first place, the legends, both on the obverse and reverse, are exactly the same. The style of script, the shaping of the letters, which is peculiar and unlike that of any other issues of the emperor, is identical. The ornaments, i.e., the flowery decorations in the field, which envelop the inscriptions are of exactly the same type. It is hardly possible to resist the impression that: (1) all these issues are efforts to reproduce (with minor alterations as to date, 'place of striking,' etc.) one and the same model, (2) that the engraver or engravers were instructed to imitate some original or archetypal die, and (3) that this was due to these coins or rather historical medals—for they are all memorials in metal of notable political events—having been issued by the directions of one and the same person in authority.

In a word, there would seem to be good numismatological grounds for holding that these coins are all connected closely in some way with one another. The question is, what is the connecting link and where are we to look for it? I venture to say that the connecting link is Sundar, the Brāhman factotum and right-hand man of the Prince Khurram or Shāh Jahān, for whom that influential personage successively obtained the titles of Rāy Rāyān and Rāja Bikramājī—the highest that could be conferred on any Hindū subject of the empire (*Tūzūk*, Trans., I, 402). The marrow of the matter is this. That prince, in his first expedition to the South, compelled Malik Ambar and the Dekkanīs, by a show of irresistible force, to come to terms and restore the fortress of Aḥmadnagar and territories, yielding a revenue of fourteen krors of dāms, which had been wrested from the Mughals during the decade of mismanagement and slackness, that immediately

followed the accession of Jahāngīr. The details, which I do not propose to reproduce here, can be perused by any English reader in Mr. Rogers' translation of the *Tūzūk* (I, 368, 380).

Ahmadnagar was restored at some time in Tīr XIIR, Jumādā II, 1026 A.H. (*Tūzūk*, Trans., I, 380). Jahāngīr informs us that Afzal Khān and Rāy Rāyān (Sundar) were the persons employed in these negotiations, and that he promoted both of them as they had "performed the duties of Wakils to \* \* \* Shāh Jahān in a becoming manner" (Ibid, I, 368, 387, 402).

The dated coins of Ahmadnagar are of 1027 and 1036, A.H. (P.M.C., No. 946 ; I.M.C., III, No. 637), and we may take it for certain that the issues of 1027 were stamped in commemoration of this restoration. The undated mintages may be fairly supposed to belong to the same period, as they resemble them closely in almost all respects. The issues of 1036 A.H. are of a very different type.

Turning now to the similar and at least equally rare mintages of Zafarnagar, it is sufficient to refer to the note on that place name in Num. Supp. XXXIV, pp. 240-49. The upshot of the matter is that Sundar or Rājā Bikramājī was ordered to return to Tamarnī with his entire army and encamp there during the rainy season of 1030 A.H. "The Rājā, in accordance with the Shāh's (i.e. the Prince Shāh Jahān's) commands, selected a spot in the vicinity of the above-named Qasba \* \* and laid the foundations of an exceedingly strong fortress \* \* to which he gave the name of Zafarnagar" (Ibid., 242).

The very few known coins of Zafarnagar exhibit no date, but it is clear that they were struck, under the directions of the Rājā, to commemorate the glorious termination of his master's campaign, and the foundation of the fortress which continued to be a place of strategetical importance throughout the seventeenth and eighteenth centuries (Ibid, 247, note 2).

The connection of Sundar with Bhujnagar rests, and can be established, on at least equally good evidence. It is common knowledge that Rāi Bhārā or Rāo Bhārmalji, the ruler of Kachh, paid *volens* his respects to Jahāngīr, while the latter was encamped at Ahmadābād in 1027 A.H.

"On Sunday, the 24th, (Tīr XIIIR) Rāy Bihāri had the good fortune to kiss the threshold: there is not a greater Zamindār than this in the country of Gujarāt. His country is close to the sea. Bihāri and the Jām are from one stem. \* \* \* At the time when Ahmadābād was adorned by the presence of the retinue of fortune for a short time, he did not come to wait on me. His country was somewhat distant, and time did not admit of the appointing of a force (against him). When it happened that I returned there, my son Shāh Jahān appointed Rājā Bikramājī with an army (for this purpose), and he, seeing his own safety in coming in, hastened to receive

the honour of kissing the threshold, giving 200 muhars and Rs. 2,000 as nazr, and 100 horses. However, there was not one of his horses that I approved of. His age appeared to me to be more than eighty years, and he himself said he was ninety. In his senses and powers there was no appearance of decay." (*Tūzuk*, Trans., II, 19-20.)

We are afterwards informed that he was given his congé on Friday, 29th, Shahrivar, 1st Shawwāl, 1027 (*Ibid*, II, 34). Again, in the lengthy prolegomena in which the author of the '*Amal-i-Sālīh*' gives an account of the achievements of his hero during the days of his princehood, we are told that when Jahāngīr was at Aḥmadābād, "three detachments of the Imperial army were sent by the orders of the Shāhzāda Khurram, i.e. Shāh Jahān, to chastise the recalcitrants in different directions. One of them was despatched under the Rāy Rāyān (i.e. Sundar) against the turbulent Jām and Bhārā; another under Rāja Bhīm, son of Rānā Amar Singh, for the punishment of the rebels in the Mahīkānthā, and a third under Sayyed Saif Khān for suppressing the disturbances on the banks of the Sābarmati \* \* \* \* And Rāy Rāyān, after reaching the country of the Jām and Bhārā, took forthwith all such measures as were necessary for forwarding the difficult enterprise he had in hand \* \* \* So that the disaffected ones (the Jām and Bhārā) submitted of their own accord and consented to wear willingly the collar of obedience. Both of them turned their faces to the Sublime Court, in the hope of finding deliverance (from ruin), and sought to make the ceremony of kissing the Imperial threshold the passports وسیله (lit. means of conciliating or obtaining favour) to happiness. (*Bibl. Ind. Text*, p. 171, ll. 1-14.)

It is clear then that it was only by a show of armed force, if not after actual hostilities, that the Rāo was obliged to acknowledge the suzerainty of the emperor and pay him homage. Now, we know, thanks to the late Dr. Codrington, that Bhārmālji actually struck Koris bearing the name of Jahāngīr. "Bhārāji," he writes, "struck another Korī bearing Jahāngīr's name, which I had only heard of, but could not come across until lately I found two specimens in the Royal Asiatic Society's Cabinet. It is like a Jahāngīr coin, and was probably struck in or about the year 1617, when the Rāo went to Aḥmadābād to pay his respects to the Emperor.

Obverse.

شاه  
بن اکبر باد  
نگیر  
الدین جها  
شاه

Reverse.

حلب  
زد در  
سکه  
راش श्रीमाराजी

The pattern for this coin was I think one of the Āgra mint, the Obv. legend of which was *سکه زد در شهر اگرو خسرو گیتی پناه* the most part of which the engraver has failed to copy.

R. Size 6. Weight, 73 grs."

(Numismatic Chronicle, Third Series, Vol. XV. 1895, pp. 69-70. The coin is figured Pl. III, 2.)

But if Sundar compelled Bhārājī to acknowledge and proclaim his subjection on his own coins, he did not stop there. We may take it that the *Khutba* was recited in the name of the emperor and that a few coins also were stamped with his master's titles, in commemoration of this triumph. As these pieces were to "make manifest to the comprehension" of the multitude, that the province had now definitely passed under the paramount sovereignty of Jahāngīr, they were to be of the customary Imperial type, and to bear at the same time some external resemblance to the indigenous currency of the district. The Mughal half-rupee was very much like the Kori in shape and size, and it was naturally chosen for the purpose. The coin in the Pūnjāb Museum is the only surviving specimen of the few pieces, which were struck on the occasion, for being presented to, and laid at the feet of the emperor.

All this may be true, but the point is: 'Can the name be reasonably read as *Bhujnagar*?' There are, in this connection, two objections which demand a reply. They are that the name of the Rāo's Capital is *Bhūj* and not *Bhujnagar*, that the vowel is long, or in other words, that the name is generally written with a 'Wāv' and not without it.

These objections are, however, easily answered. The fact is that both forms are correct and *بھج* as well as *بھج نگر* and *بھج* are found in good writers. *بھج نگر* occurs in the *Ṭabaqāt-i-Akbarī* (Lucknow Litho, p. 364, l. 24). *بھوج نگر* in the *Mirāt-i-Aḥmadī*, (Bombay Litho., Part II, 152). Elsewhere, in the same work, we find the name of the town is written *بھج* (Part I, p. 26, l. 2). The capital of Rāo Bhārā is mentioned twice in the *Mirāt-i-Sikandarī* as *بھج* (Bombay Litho., 1831 A.C., p. 137, l. 5; p. 454, l. 6; Fazil Luṭfullah's Trans., pp. 83, 327). Abūl Fazl also in his account of the Śūba of Gujarāt informs us that "on the west of the Ran lies a large territory called Kachchh, and that the residence of the chief is at Bhuj" (*حاکم نشین شهر بھج*) *Aīn-i-Akbarī*, Text, I, 392, l. 7; Jarrett II, 250. It will be seen that the first or really material part of the name is written by Akbar's minister just as it is on the coin.

Passing on to European writers, I find in a "Memoir and

Brief notes relative to the Kutch State," published by the Government of Bombay in 1855 (Bombay Government Selections, New Series, No. XV), His Highness the Rāo saying in reply to a question put to him by the Political Agent of the Province: "*Bhooj Nuggur* is the name of the Capital founded by Rao Shree Khengarjee \* \* \* in Sumvat 1605 (A.D. 1548)" p. 206. The author of the 'Rās Malā' also, in telling the tale of Jug Dev Parmār, speaks of "*Bhoojnuggar*" as the place "where Rāja Phool reigned." (A. K. Forbes, op. cit., Reprint 1878, p. 114.)

The generality of Anglo-Indian authors employ the shorter form and write 'Booge' or 'Bhooj' or Bhūj. (Hamilton, East India Gazetteer, Ed. 1815, p. 322; Mac Murdo, Transactions, Literary Society of Bombay, II, 229; Thornton, Gazetteer. Ed. 1858, s.v.; Imperial Gazetteer, Ed. 1908, s.v.) ; but James Burgess leaves no doubt as to his preference for 'Bhuj' with the vowel short (Antiquities of Kāthiāwad and Kachh, pp. 200, 212). It is not easy and perhaps hardly worth while to say which form, 'Bhuj' or 'Bhūj' is correct. But it may be pointed out that the etymology of the name is in favour of shortening the vowel. The Rāo of Cutch informed Mr. Ogilvy, the Political Agent of the State in 1850, that the town was so called because it was founded after the Rāo Khengarjee expelled Jām Rāwal from Kachh by the force of his *arm* (मुज्ज). (Memoirs relative to the Kutch State, Bombay Government Selections, New Series, XV, p. 207.) James Burgess derives the name from the City having been dedicated to the snake-divinity, *Bhujanga* or *Bhujia* (loc. cit., 200). The Jesuit Tieffenthaler and Captain Macmurdo say the same. (*Description de l'Inde*, I, 396<sup>1</sup>; Transactions of the Literary Society of Bombay, Reprint 1876, II, 229-30<sup>2</sup>.) Whatever derivation is held to be correct, it is certain that मुज्ज, *arm* and मुज्जंग, *snake* are both spelt with the short vowel in *Gujarātī* as well as in *Sanskrit*. As for the form *Bhujnagar*, I may say that 'Bhuj' is not the only Indian place-name to which the adjunct *nagar*, *ghar*, *gaḥ* or *pūr* is indifferently prefixed or affixed at times. Thus Dhār is sometimes called "Dharanugger"; Forbes, Rās Malā, Ed. 1878, p. 147;

<sup>1</sup> Tieffenthaler says: "Bhoudj (ou Bhodj) est la capitale du district de Catsch \* \* Cet endroit a reçu son nom d'un serpent car beaucoup de personnes assurent: le fait est même très certaine, que l'on revere ici un Serpent, et que tous les jours on lui sert du lait et du ris. Il a le nom de *Bhoudj-bavan*, i.e. que signifie: le serpent long de cinquante-deux aunes." Burgess adds that *Bhujanga* is one of the five snake-brethren mentioned in Hindu Mythology.

<sup>2</sup> "The city is situated on a plain on the S.W. side of the hill called Bhoojia, \* \* \* On the summit of the mountain, \* \* \* is a temple dedicated to the worship of the Nag or hooded snake." (Macmurdo, loc. cit.)

Ujjain,	Ujjain-nagari;
Vallabhī,	Vallabhīnagar;
Bhīm,	Bhīm-nagar (Elliot and Dowson, II, 444, 445).
Tatta,	Nagar-Tatta;
Piram,	'Piramgur' (Tod, Cal. Reprint 1898, p. 119).
Ābū,	Ābūgarh (Forbes, Rās Mālā, Reprint, 1878, p. 180).
Chitor,	Chitorgadh;
Āsir,	Āsirgadh (Imp. Gaz. s.v.; Tod, Ed. Crooke, III, 1446, 1461).
Mandū,	Mandūgadh (Rās Mālā, ibid., 296, 294).
Dūkam,	('Dogāon' of Akbar's Coins), Dūkampūr, (Elliot and Dowson, I, 56).
Jālna,	Jālnapūr (Ibid, VI, 102; VII, II, 305).

It is hardly necessary to multiply instances.<sup>1</sup> Nothing can be further from my thoughts or intentions than to speak positively on such a matter, but it seems to me that when the Numismatic evidence is looked at in the "dry light" of history, the new reading has much more to be said for it than the old one.

S. H. HODIVALA.

#### 245. TWO GOLD GUPTA COINS.

Among the coins which I purchased last year for the Provincial Museum, Lucknow, are two gold coins of Chandragupta II which present some uncommon features and can well be treated as new varieties. I should, therefore, like to publish them for the information of those interested in the subject.

(1) Chandragupta II, Lion-slayer type. *Metal*, *Al.* *Weight*, 119 grains. *Size*, .8. *Provenance*, (Purchased at Lucknow). *Plate III*, 7.

*Obverse*.—King stands to left wearing waistcloth with sash which floats behind, ornamental head-dress and large ear-rings, and shoots with bow at lion which falls backwards. As apparent on the coin, the king perhaps does not trample on the lion which only falls gaping to the ground.

So far as the legend is concerned it is a poor specimen because only the concluding portion, viz. *Kramah* is distinct, but the chief interest centres round *Chandra*, which figures vertically to right above the sash and imparts a degree of novelty to the coin.

<sup>1</sup> On the gold Muhrs and silver Koris of Rāo Prāgmalji II, the name of the town appears as *بھوج نگر* (Codrington, Num. Chron., 1895, pp. 73-74. Examples of *بھوج* and *بھوج نگر* (Kachhbhūjnagar) also occur. (Ibid, pp. 75-76.)

*Reverse*.—Goddess (*Lakshmi-Ambikā*) seated, nimbate facing, on lion couchant to left, holding fillet in outstretched right hand and lotus with stalk in left. To left is a symbol blurred, and to right *Sinhavikramah*.

This specimen cannot be treated as Var. B of Allan's Gupta Catalogue<sup>1</sup> because of the position of *Chandra* on the obverse, and the goddess holding lotus instead of cornucopia in the left arm on the reverse.

(2) Chandragupta II, Horseman type. *Metal*, *Al*. *Weight*, 121 grains. *Size*, .85. Provenance, (Purchased at Lucknow). Plate III, 8.

*Obverse*.—King is riding on fully caparisoned horse to right. He wears waistcloth with sashes and jewellery (ear-rings, armlets, etc.) and holds (?) a bow in right hand. A crescent appears behind the head. Portions of the legend *Parambhā-gavata Mahārājādhirājā Śrī Chandraguptah* are clear.

*Reverse*.—Goddess seated to left on wicker stool is sowing seed with her outstretched right hand, and in the other holds a lotus with a long stalk behind. To left is a symbol, and to right, the legend *Ajitavikramah*.

This coin bears a close resemblance to Var. A of Allan's Gupta Catalogue,<sup>2</sup> but the difference lies in the bow being so held in right hand, as if it were resting on the back of the horse, and in the goddess sowing seeds instead of holding a fillet.

17th November, 1922.

PRAYAG DAYAL.

## 246. TWO MUḠHAL MUHARS.

### I. Shāh 'Ālam II. 1176-4 R. Jahāngīrnagar.

A comparison of this coin of Shāh 'Ālam II with the Murshidābād coin of the same year (Lucknow Museum Catalogue, No. 4498) leaves little doubt as to the location of the mint. That coin agrees in mark, size, arrangement of the inscription and, above all, mint marks on both sides. They were both struck under the same ruler, viz the Nawāb of Bengal—one at Murshidābād and the other at Dacca (i.e. Jahāngīrnagar). The only difficulty is that there is no sign of the 'Alif' of ۴ which makes one a little doubtful.

The coin does not agree exactly with the British Museum Catalogue No. 1157, because the latter was struck later and it is of silver, and was probably struck under British influence, when the mint mark on the obverse was changed. (See Lucknow Museum Catalogue, No. 5094 and 5095, of Murshidābād,

<sup>1</sup> Cf. Allan, B.M.C., Coins of the Gupta Dynasties, p. 39, Plate VIII, 13.

<sup>2</sup> Cf. Allan, B.M.C., Coins of the Gupta Dynasties, p. 45, Plate IX, 14 and Plate X, 4.

which have the same mint mark on the obverse as B.M.C., No. 1157 of Jahāngīrnagar).

There is no other gold coin of Jahāngīrnagar of Shāh 'Ālam II known (see Mr. Whitehead's list of Mughal Mints). Even the silver coins of this mint are very rare, there being only one shown in the British Museum Catalogue. The mint was taken over by the East India Company three years after this coin was struck.

<i>Obverse.</i>	<i>Reverse.</i>
الله حامي دين	مانوس
شاه	ميمنت
سايمه فضل شاه عالم باد	۴
سکه	سنه جلوس
۱۱۷۴	ضرب
ز د [ در هفت کشور ]	[ جها ] نکه [ پیر نگر ]

Plate III, 9.

## II. A Square Muhar of Akbar dated 999.

I cannot make out the mint. The obverse is not unlike the obverse of the Kālpi coin of 966 (see Indian Museum Catalogue No. 206).

It is also like the obverse of the Ahmadābād and Āgra coins of 981 (see Indian Museum Catalogue, No. 71, 78 and 79).

I cannot find a similar reverse in any of the Catalogues. It may turn out to be a unique specimen in its way, being probably an old type continued late, in some out-of-the-way mint, perhaps in Central India or Mālwa.

<i>Obverse.</i>	<i>Reverse.</i>
In square, the Kalima and date 999, in lower left corner.	In double square, inner one of dots :—

بادشاه غازي  
اکبر محمد  
جلال الدين

Plate III, 10.

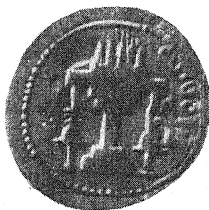
D. V. TARAPOREVALA.



1



2



3



4



5



6



7



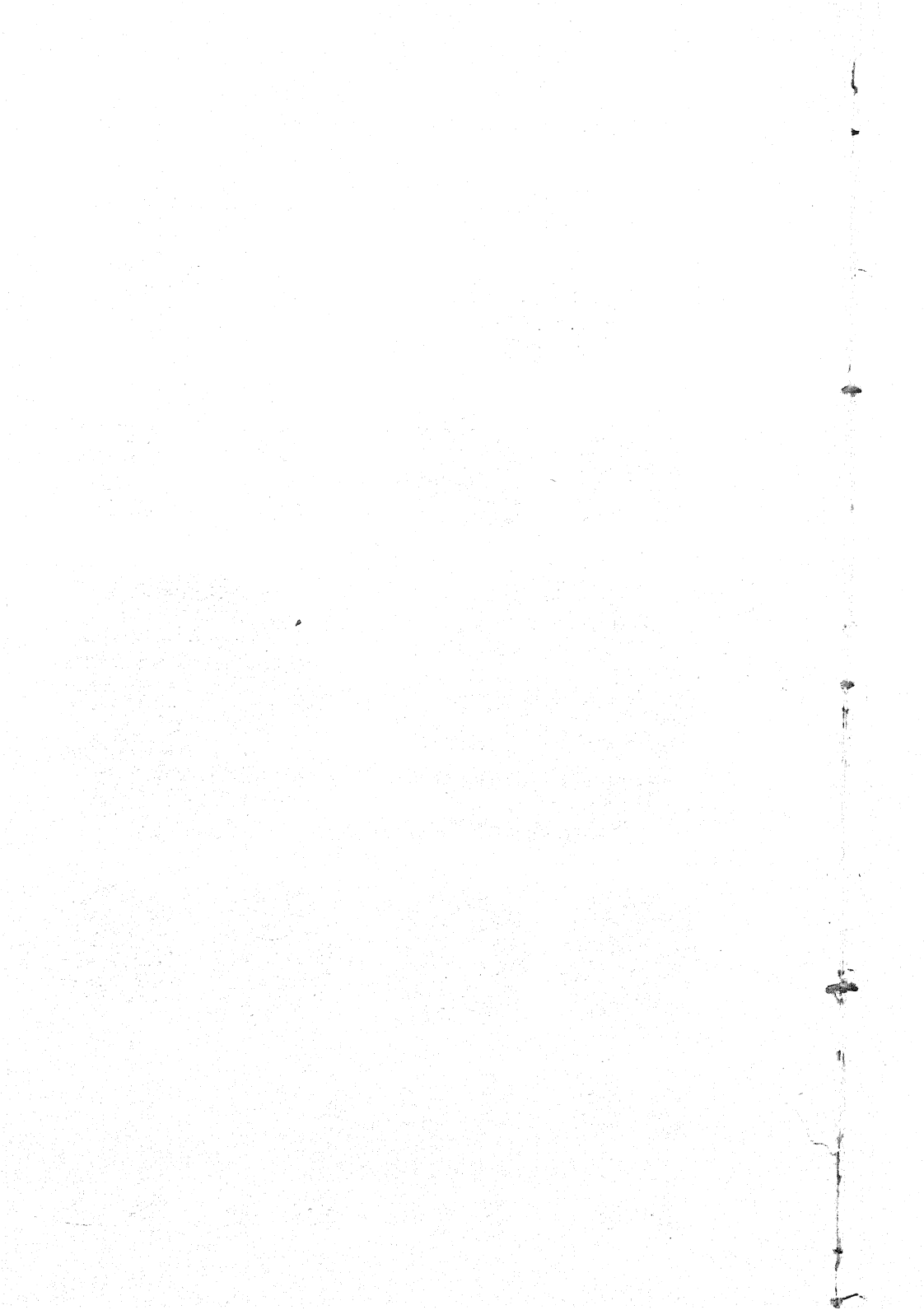
9



10



8





1



2



3



4



5



6



7



8



9



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11



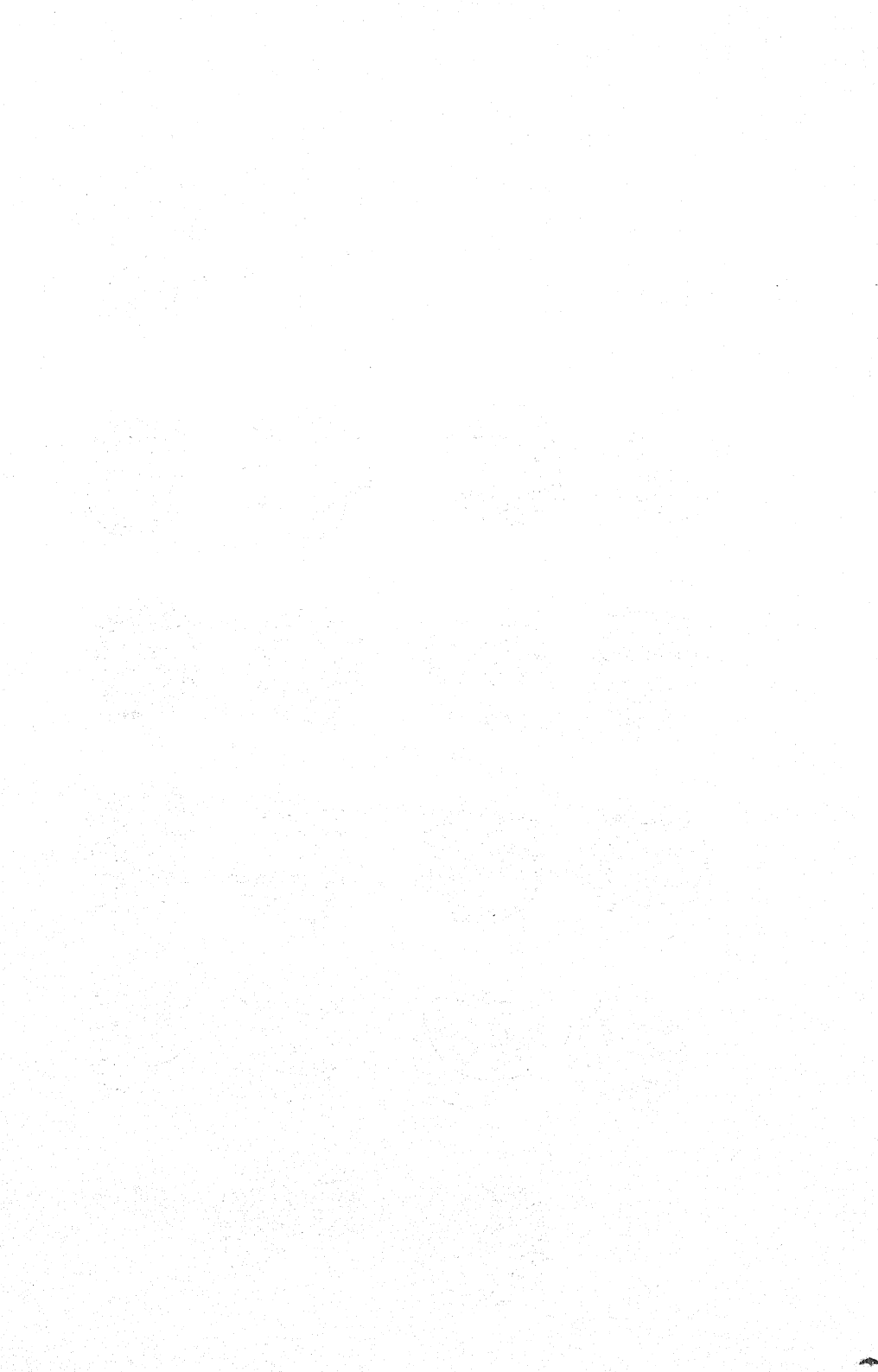
12



13



14





1



2



3



4



5



6



7



8



9



10





## 19. Hinduism according to Muslim Sufis.

By MAULAVI 'ABDU'L WALI, *Khan Sahib*.

The relations between the Muslims and Hindus of India have been those of conquerors and conquered, rulers and ruled, and therefore not always very happy. Beneath the political differences it may safely be asserted that religious antagonism has been more pronounced. Have these two peoples—the polytheistic Brahmans and the unitarian Muhammadans—ever calmly, dispassionately, and free from bias, considered the true religious view-points of each other? My reading of the religious history of Islām has convinced me that a few Muslim Sufis, in the midst of the political, social and ecclesiastical strife and differences, have pondered over the Hindu idolatry, and polytheism, calmly, and free from racial prejudice, and ethnical bias. To an Arab all the world is '*ajam*' or dumb or barbarian. To a Westerner everything eastern is barbarous. To a conqueror anything that a vanquished foe may offer is hateful. But to this universal law, I am happy to note that there are honourable exceptions.

Many years ago, a Muhammadan scholar brought to light in a private conversation certain views of certain Muhammadan Sufi saints and divines about the Hindu religion, idolatry and scriptures, which appeared to me very strange. Years after, I was fortunate to consult him in his sick-bed, as to his sources, which I am glad I noted before he left the world. I have consulted since other works, and the result has confirmed the views of the deceased Maulavi.<sup>1</sup>

In a book on the life and teachings of Hadrat Shamsu'd Din Habibu'l-lāh Mirza Jānjānān, *Maẓhar Shahīd*, the author Shāh Ghulām 'Alī, otherwise called Shāh 'Abdullāh, Mujaddadī, 'Alavī, of Dehli (lithographed at the Ahmadi Press, 1269 H.) quotes a few original letters of the saintly Mirza. I may here mention that the family of Mirza Jānjānāu Shahīd is intimately connected with the Mughul Emperors of India. Twenty-eighth from Hadrat 'Alī was the saintly Mirza. In the year 800 H. (1397 A.D.), Āmīr Kamālu'd-Dīn, one of his ancestors, went from Ṭāyef in Arabia, on some occasion, to Turkistān, where he contracted matrimonial connexion with the daughter of one of the *ulus* or clans, called Qāqshāl. As the Qāqshāl Chief

<sup>1</sup> Maulavi Ra'ūf Ahmad was a son of late Maulavi 'Abdu'r-Ra'ūf of Mauda Sarulia, Sub Division Satkhira, District Khulna of Bengal. Ra'ūf Ahmad died at the age of about 71 years on 3rd zil-Q'ada 1335 H. Wednesday, 10 A.M. (August 22, 1917 A.D. = 6th Bhadra, 1324 B.S.).

had no male issue of his own, the rulership of that part of the country devolved on the descendants of his son-in-law and daughter. At the time when Humāyūn wrested India from the Sūr Afghāns, he brought with him to India two brothers, being members of the above family, named Maḥbūb Khān and Bābā Khān, who were third in descent from Āmīr Kamālū'd-Dīn. The account of these two brothers is to be found in the Chronicles of Akbar. From mother's side they trace their descent to the family of Āmīr Timūr. Fourth in descent from Bābā Khān was Mirza Maḥzar. On account of the rebellion of Bābā Khān against Akbar's Government, Mirza Jān, father of Mirza Maḥzar was deprived—according to Akbar's direction to his descendants—of any high *mansab* or dignity. Bābā Khān's descendants were punished for the sin of Bābā Khān. Mirza Jān passed his days in the service of Aurangzib and at last gave up the world, and was initiated in the Qādiriya order. He died in 1130 H. (1717 A.D.).

The saint, Mirza Jānjānān Maḥzar, was born in 1113 H. (1701 A.D.), received his usual education, during his father's, life-time. He acquired the knowledge of *hadīth* from Hājī Muḥammad Āfdāl Siyalkoti, and of the Qur'ān from Hāfiẓ 'Abd'ur Rasūl of Dihli. He was initiated in the Naqshbandiya order of Ṣūfis from Sayyad Nūr Muḥammad of Badāon who was initiated into the mystery of the order of the Mujaddad-i-Alf-i-Thānī, being removed from the latter by two *wāsiyas* or links. The saint passed years in his company. After Sayyad Nūr Muḥammad's death, the Mirza received the robe and permission of a devotee of the Qādiriya, Naqshbandiya and Chishtiya affiliations. He devoted his life in the pursuit of Ṣūfism and died in 1195 H. (1781 A.D.). It is said that Mirza Jān, who was with Aurangzib in the Dakan, gave up his service, and was proceeding to Akbarabād. On the way, at Kalābagh, within the jurisdiction of Mālwa, his illustrious son was born. The news coming to the notice of the Emperor, the latter named the child Jānjānān. His nom-de-plume was 'Maḥzar.

I now come to my immediate purpose. In his fourteenth letter, quoted by Shāh Ghulām 'Alī [*vide* Appendix I(A)] Mirza Jānjānān Maḥzar writes, in Persian, to one of his disciples, thus:—

“You inquire if the kāfirs (unbelievers) of India—like the pagans of Arabia—have a religion without any basis, or that there was a basis for it, but is now abrogated; and what belief one need entertain regarding their ancients. The following, briefly, is written after inquiry and without partiality. You should know that it appears from the ancient books of the Indians that the Divine Mercy, in the beginning of the creation of the human species, sent a Book, named the Bed (Veda), which is in four parts, in order to regulate the duties of

this as well as the next world, containing the news of the past and future, through an angel or divine spirit by the name of Branha (Brahmā), who is omnipotent and outside the creation of the universe.

Their religious jurists (*mujtahids*) have deduced from it (Veda) six systems and have based the fundamental principles of their religion on them. This science is called Dharam Shaistar (Dharma Shastra), that is the science of religion or theology. They have classified different classes of human species into four castes and deduced from that book, for each, four separate rules of conduct on which they have based their minor rules of conduct. This science is known as Karam Shaistar (Karma Shastra). This is the science of action or Law. As they do not believe in the abrogation of (Divine) ordinances, but according to (our) judgment there must needs be rules of conduct agreeable to the changed disposition of men and space, they have divided the long duration of the world into four periods and named each a *Jug*. For men of each *Jug*, they have prescribed, from those four parts (four volumes of the Veda), certain rules of conduct. No reliance should be put on the innovation the modern scholars have introduced.

All the schools (of the Hindus) unanimously believe in the unity of the most high God; consider the world to be created; believe in the destruction of the world; in the reward for good and bad conduct, on the resurrection and accountability (of conduct). They are far advanced in theoretical and transcribed sciences, in austerity, in religious endeavours. They are eminent in searching after the sciences and revelations. Their wise men have divided the human span of life into four divisions: The *first* division for the acquisition of learning; the *second* for the acquisition of the necessities of life and (begetting) children; the *third* for correcting the conduct, and training of self; the *fourth* for the exercise of seclusion and aloofness (from wordly affairs), which is the crown of human perfection, and the highest emancipation, called *Maha-mukti*, is dependent on it. The rules and regulations of their faith are fully and well arranged. So it is evident that it had been a good religion but abrogated. In Islamic *shari* no mention of any other abrogated religions, save Judaism and Christianity, is made, whereas many other religions have undergone the process of obliteration and affirmation (i.e. changes).

It ought to be noted that according to the holy verse (of the Qur'ān): '*And there is not a people but a warner has gone among them,*' and also: '*And every nation had an apostle,*' and other verses, there were prophets also in the countries of Hindustan, on whom be peace, and their account is contained in the books of the Hindus. From their signs, it is apparent that they had attained high and perfect position. The Universal Divine Mercy did not leave out, for the good

of his creatures, even this extensive country. Before the advent of the signet of the prophets (Muhammad), may God's peace and blessings be upon him, there was sent a prophet to every nation. It was incumbent for a particular nation to follow his orders and advices and not those of others. Since the mission of our prophet, who is the last of the prophets, may God's peace be on him, and who is delegated to all mankind, and his religion supersedes all other religions—from east to west—no one, till the end of the time can dare to deny him. Therefore from the time of his delegation till to-day which is 1,180<sup>1</sup> years, those who have not believed in him are unbelievers—but not so the previous ones. According to the holy verse: 'Of whom (the prophets) we have mentioned some to you, and of whom we have not mentioned some to you,' the Islamic Law (*Shar'*) is reticent as to most of the prophets. It is therefore preferable to keep silent regarding the prophets of India. Neither should we be confident enough to accuse them and their followers of unbelief and (relegate them to) perdition, nor are we bound to believe in their salvation. Our entertaining good opinion (regarding them) is proved, provided we look to the question free from prejudice. Such ought to be our attitude regarding the people of Persia and every other country who lived before the advent of the last of the prophets and about whom the voice of *Shar'*, (Islamic Law) is silent, and whose ordinances and signs are in accordance and consistent with equity or the laws of nature.

No one should be called a *kāfir* or infidel without convincing evidence. The secret of their (Hindus') worshipping idol is this: There are certain angels who exercise power, by order of God, in the world of make and break (عالم کون و تفساد); also the souls of certain perfect individuals, after they have ceased to have connection with the body and who continue to exercise power in this world; as also those who, in their (Hindu's) opinion, like *Khidr*, are ever alive—of these they make representations and concentrate their thoughts on them, and on account of this concentration, they attain, after a considerable time a suitability or connection (*munasibāt*) with the originals of the representations, and owing to this connection they attain their wants of this as well as of the other world. This practice resembles to the *Ṣūfis* of Islām meditating the form of their spiritual guides and getting grace out of it. The only difference is that outwardly the *Ṣūfis* do not set up an effigy of their *Shaykhs* (Spiritual-guides). The matter has in no way any connection with the belief of the infidel 'Arabs who used to say that their idols themselves were possessed of influence and effectiveness and were not a means of God's influence. They

<sup>1</sup> This is also the date of writing of this letter. It corresponds to 1766 A.D.

considered the idol to be terrestrial God, and *Khudā-i-Tāla*, the Celestial God. This is polytheism (*shirk* or setting a partner with God). The prostration of the Hindus is the prostration of greetings and not the adoration appertaining to Divine worship. This according to their custom they do to their fathers, mothers, priests and teachers which is in vogue instead of *salām* (salutation), which they call *dandwat*. And a belief in the transmigration of soul is not necessarily tantamount to *kufr* or polytheism. Adieu!"

In the same book p. 67 [*vide*, Appendix I(B)] is written that a man mentioned of a dream which he had dreamed to *Hāji Muḥammad Afdal*, a teacher of the *Mirza Ṣāhib*. He said: 'I dreamed a field full of fire. *Kishan* (*Krishna*) was in the fire, and *Rām Chandar* (*Rāma Chandra*), on the border of the fire.' A man who was present gave his opinion that as *Kishan* and *Rām Chandar* were the leaders of the infidels, they were being punished in the Hell-fire. *Mirza Jān Jānān Maḡhar*, who was present, said: 'This dream has another interpretation.' He said: 'It is improper to charge particular persons of being infidels, unless their *kufr* or infidelity were proved by the canon of Islamic Law. The Book and Sunnat (the *Qur'ān*, and Islamic law) are silent about these two persons. It is evident from the *Qur'ānic* verse: "*There is no village where there was no warner*" that there were *bashīr* and *nadhīr* (warner and giver of good news) among those people. Under the circumstance it is probable that they (*Krishna* and *Rama*) were saints or prophets. *Ram Chandar* having been in the beginning of the creation of the *genii*—when people lived long and were powerful—used to train the men of his time to the doctrine of the right-path (*nisbat-i Sulūk*); while *Kishan*, who was the last of their eminent men—when compared with past, men's ages were shorter, and strength less—used to preach to his people the (advanced) doctrine of passion (*nisbat i Jadhbi*). The mention of song and music, in which he indulged greatly, is a proof of his excessive (Divine) love, and ecstasy for passion. The fire of his excessive love and ecstasy appeared as a field of fire. *Kishan* who was immersed in the state of love appeared in the centre of that fire, and *Rām Chandar*, who was in the path of *sulūk* (as a beginner) was seen at the end of it. And God knows best.' *Haḍrat Hāji Afdal* liked the interpretation very much and was greatly impressed by it.

A disciple of the above *Hāji Afdal* had been to *Mathra* (*Mathura*). He was in want of something for which he required seven rupees. One night as he was engaged in prayer after mid-night (*tahajjud*), there came in a man with the splendour of *Kishan*, as represented by the Hindus, greeted him and put a sum before him. He requested the new-comer to wait till he had finished his prayer. After prayer, he asked his name.

He replied : ' Kishan, and these seven rupees are for your entertainment as you have come to our land.' He replied : ' I am a Muḥammadan. and Muḥammad, the Chosen, is our Prophet, whose favour is enough to fulfil our wants.' Kishan was in tears and said : ' We have heard of the Prophet of the last age, of his sincerity, and of his followers. We found more than that.' "

The above are the views of one of the foremost Muslim scholars of India who combined in his person at once the esoteric and exoteric doctrine of Islam. They are lucid, straightforward and logical. A writer, thinker, and a great Ṣūfī he is also a poet of great eminence, and was one of the few who first composed in the Urdu language as she was spoken at Dihli. His opinion about the Hindu religion and pantheism is supported by eminent Shaykh Aḥmad-i-Fāruqī, better known as Muḥaddad-i-'Alf-i-Thānī of Sarhand (971-1034 H. = 1563-1624 A.D.). In his letter No. 259, Volume I, the Shaykh writes that there is no place where prophets have not appeared, including India, who have not preached and proclaimed the existence, the proof and the sanctity of the Creator. The light of these divine messengers are shining through the darkness of Indian paganism, like the candle. It is possible to fix those towns where they appeared. Their mission was sometimes successful, and sometimes not. Whatever truth about God's attributes, His holiness, and His purity, are to be met with, in the writings of the Indian polytheists, they are deduced from those prophetic lights.

It is said, I believe, in Mir Khond's "Raudatu's-Ṣafā" that the tomb of prophet Shīth (Seth) is in Oudh.

Sultān Dārā-Shikōk (1022-1069 H. = 1613-1658 A.D.) the eldest son of Emperor Shāh Jāhān wrote more than one book of great erudition and scholarship on mysticism. I will try to convey the purport in English of the Foreword of Dārā Shikōh's Persian "Sirr-i-Akbar" or the translation of Upanikhat or Upanishad (*vide* Appendix II) Professor E. B. Cowel, in the Preface p. VIII to Kaushiki-Brahmana-Upanishad (Bibliotheca Indica Edition, 1861) says, "*The Bengal Asiatic Society has a MS. of the Persian translation, which I have occasionally consulted ; the style is much simpler than Anquetil's barbarous jargon ; but the mixture of Sanskrit words, marvellously disguised, makes it difficult.*" I use the same rare MS. <sup>E 103</sup><sup>1</sup> According to Robert Orme's "Historical Fragments (London, 1805), there is a MS. translation of the book in English, in the British Museum, by Mr. N. B. Halhead. Orme has copied a few opening passages of the translation.

<sup>1</sup> The Asiatic Society's MS. E 103 appears to be incomplete. There is another copy in the Asiatic Society's Government of India Second Collection No. 154, which is more complete, and written very beautifully.

The book "Sirr-i-Akbar" commences with *Om Shri Ganeshai Nomoh*. The opening chapter of the Qur'ān is called by Dārā Shikōh *Omū'l-Qur'ān* (for *Ummu'l-Qur'ān*) to correspond the first word with the Vedic word *Om*. After this Dārā Shikōh says that he went to Kashmir in 1050 H. (1640 A.D.) and there met with, and was initiated by the Sūfi sage Mullā Shāh. As he was desirous of meeting gnostics and pious men of all sects and of hearing their views on monotheism, he studied a large number of books on *tasawwuf* or theosophy and wrote several booklets on the subject. As his thirst for knowledge increased, there arose doubts which could not be satisfied except by the words of God. There were many secrets in the holy Qur'ān, but their meaning was hidden or allegorical. There were very few men who could understand them. He wanted to seek the truth from other heavenly books, so that if there was in one book anything concise, in the other it might be more detailed. He studied the Old and New Testaments including the Psalms and other sacred books. The doctrine of monotheism was there mentioned in a mysterious way, and owing to imperfect translations made by interested persons their meaning was unintelligible. While no one of Hindustān doubted or questioned the monotheism of ancient Indians, why did, queries Dārā Shikōh, the ignorant men of his time wrangle about the present-day Indian's belief in monotheism—which might be supported by the Qur'ān and the Traditions of the Prophet—being ever ready to oppress or kill them, according to the canon devised by themselves. He at last found that the Indian monotheists had explained the matter very comprehensively and plainly. After inquiry he came to know that the essence of the four Vedas was to be found in the Upanikhat, which was a treasure of monotheism. As he wanted to know the truth, and not in what language it was written—whether in Arabic, Syrian, Iraqi (Chaldaic) or Shanskrit—he determined to collect all the Upanikhats, which were the mine of monotheism, and the number of those who understood their meaning was growing less. The work was translated into Persian without subtraction or addition, or selfish motive, faithfully and word for word for his use. As these secrets were kept concealed from the followers of Islam, he wished to know the real facts. The city of Benares being the University of these truth-seeking people, and Prince Dārā Shikōh having (political) connection with the city, he gathered together Pandits and Sanyāsīs, who were most learned and great authorities on Upanikhat, and he translated the book in 1067 H. (1656 A.D.) without any worldly thought. He found all the secrets, he was in search of, in it fully explained. It was, indeed, undoubtedly the earliest of the heavenly books and the spring of the monotheistic stream.

It was in accordance with the holy Qur'ān, or rather it was its commentary. It appeared to Dārā Shikōh that the following verse actually referred to this eternal work (Upanikhat): "*This is the honourable Qur'ān, in the preserved book, let none touch it but the purified. It is a revelation from the Lord of the worlds.*" It meant (according to Dārā) that the excellent Qur'ān was in the book, and that book was hidden, which none but the clean could comprehend, revealed from the Creator of the world and of all the creatures. It appeared to him that this verse did not refer to the Psalms, the Pentateuch or the Gospel. It appeared from the word *tanzil* (revelation) that it did not refer to "the indelible tables." As Upanikhat meant "the secret to be concealed" it was certain that by the secret book, this ancient book was meant. He knew from it what he had not known, and understood from it what he had not understood. He had no other purpose or motive (in undertaking this duty) but to benefit himself, his descendants, friends, and seekers after truth. He is the fortunate one who having laid aside the hankering of his evil genius for the true sake of God, should read and understand, without prejudice, every sentence of this translation entitled the *Sirr-i-'Akbar* (Greatest Secret)—believing the same as the Work of God—he will without loss, without fear, and without sorrow, be saved and helpful (to others).

This book and the *Majma'u'l-Bahrayen*<sup>1</sup> reflect great credit on Sultān Muḥammad Dārā Shikōh. It was he who collected eminent Pandits and Divines of India at Benares, and translated the till-then little known scriptures of the Hindus into Persian. But the interpretation he put on the verse of the holy Qur'ān he has quoted is far fetched and not convincing. The Vedas and Upanishads are not the works of one man, but according to modern researches are the compositions of Munis and Rishis, of both sexes, who might be inspired. The mystic doctrine of the Upanishads not confined in one book was no more confined to one nation or one land. The mystics of Islam have from the very earliest times given expression to Divine Unity and the love of the Universal Father. This doctrine is to be found among all or nearly all the nations of antiquity and not confined to India only.

The opinion expressed by Mirza Mazhar is the considered

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<sup>1</sup> This book, too, was written in Persian. The treatise was brought to England by Mr. Frazer, and is in the Radcliffe library under the title, "*Mujmah al Bahrain* (the uniting of both seas). A treatise wrote by Sultan Darah Shikowh, eldest brother to Aurang-zebe; in which he endeavours to reconcile the Brahmin's religion with the Mahomedan; citing passages from the Koran to prove the several points, etc.,"—Orme's "*Historical Fragments*" (1815) Note LI. p. 238.

Manuscripts of the book are to be found in libraries of India. It has been translated also in Arabic.

judgment of a scholar and mystic. He does not distort the meaning of the Qur'ānik verses. He admits their correct and admitted meaning, and deduces therefrom reasonable conclusions. It is obvious that Mirza Jān Jānān Maḡhar was aware of Dārā's works.

I will conclude this paper with the following lines from Maḡmūd Shubistari's "Gulshan-i-Rāz" which he composed in 717 H (1317 A.D.) more than three centuries before Dārā.

بَت اِيْدِجَا مَظْهَرِ عَشَقِ اسْت و وحدت  
 بود زَنَارِ بَسْمَنِ عَقْدِ خُدْمَت  
 چو کُفَر و دِيْنِ بُوْد قَايِمِ بَهْسْتِي  
 شَوْد تَوْحِيْدِ عِيْنِ بَتِ پِرِسْتِي  
 چو اَشْيَا مَسْت مَسْتِي رَا مَظْهَرِ  
 اَزَانِ جَمْلَه يَكِي بَتِ بَاشَدِ آخِرِ  
 مَسْلَمَانِ گَرِ بَدَانَسْتِي کِه بَتِ چِيَسْتِ  
 بَدَانَسْتِي کِه دِيْنِ دَرِ بَتِ پِرِسْتِي اسْتِ  
 و گَرِ مَشْرُکِ زِ بَتِ آگَاةِ گَشْتِي  
 کَچَا دَرِ دِيْنِ خُوْدِ گَمْرَاةِ گَشْتِي  
 نَدِيْدِ او اَزِ بَتِ اَلْاَخْلَقِ ظَاہِرِ  
 بَدِيْنِ عِلَّتِ شَدِ اَنْدَرِ شَرَعِ کَاہِرِ  
 تَوْہِمِ گَرِ زِ نَه بِيْنِي حَقِّ پَنْہَانِ  
 بَشَرَعِ اَنْدَرِ نَخْوَانَدَتِ مَسْلَمَانِ

#### *Translation.*

The idol here is the manifestation of Love and Unity.  
 To fasten the cord indicates the knot, (bond) of service.  
 Since idolatry and faith (Islam) co-exist with the being  
 Unity is really the idol-worship  
 When all things are the manifestation of the being,  
 One of them must necessarily be the idol

If the Musalmān knew what (really) the idol was  
 He would perceive that the Faith was in idol-worship  
 If the polytheist were aware of what the idol was,  
 How could he lose his way in his own religion ?  
 He did not see in idol but the outer form  
 For this reason he became under the (Muslim) law an infidel.

You, too, if you will not see the hidden truth in the idol,  
Will not be called under the (same) law a Musalman.

#### APPENDIX I (A).

(Extracts from the life and teachings of Hadrat *Shamsu'd-Dīn*  
*Habībū'l-lāh Mīrza Jānjānān Maẓhar, Shāhid*).

[انتخاب از رسالۀ شریفہ در بیان حالات و مقالات حضرت شمس الدین حبیب اللہ جناب مرزا جان جانان مظہر شہید قدس اللہ سرہ - از تصنیفات حضرت غوث الاسلام و المسلمین الہادی الی اللہ حضرت مرشدنا شاہ غلام علی الملقب بشاہ عبد اللہ المجددی طریقت و العلوی نسباً و الدہلوی مسکناً و مدفناً رحمۃ اللہ علیہ - مطبوعہ مطبع احمدی سنہ ۱۲۶۹ ہجری]

pp. 119-121 مکتوب چہاردم در بیان آئین کفار ہند - پرسیدہ بودند کہ کفار ہند مثل مشرکان عرب دین بی اصلی دارند یا آنرا اصلی هست و منسوخ شدہ و در حق پیشینیان اینہا چہ اعتقاد باید کرد - مختصری از روی تحقیق و انصاف مرقوم میگردد - بدانند انجہ از کتب قدیمہ اہل ہند معلوم میشود این است کہ رحمت الہیہ در وقت آغاز پیدایش نوع انسانی برای اصلاح معاش و معاد کتابی مسمی بہ بید کہ چہار دفتر دارد مشتمل بر احکام امور نہی و اخبار ماضی و مستقبل است بدو سہ مملکی برینہا نام کہ الہ و خارجہ ایجاد عالم است فرستادہ - و معتمدان اینہا از ان کتاب شش مذهب استخراج نمودہ بنای اصول عقاید بران گذاشتہ - این فن را دھرم شایستر نامیدہ اند یعنی فن ایمانیات کہ علم کلام باشد - و افراد نوع انسانی را چہار فرقہ نمودہ چہار مسلک از ان کتاب بر آورده برای ہر فرقہ مسلکی قرار دادہ بنای فروع اعمال را بران نہادہ اند و این فن را کرم شایستر خواندہ اند یعنی فن عملیات کہ علم فقہ باشد - و چون نسخ احکام را منکر اند و بحکم عقل مناسب طبع اہل مدت و زمان تجویز تغیر اعمال ضرور است و عمر طولانی عالم را چہار حصہ ساختہ ہر یکی را جگ نام کردہ برای اہل ہر جگ طور عملی از ان ہر چہار دفتر اخذ نمودہ اند -

و آنچه متأخرین اینها تصرفات کرده اند از اعتبار ساقط است - و جمیع فرق ایشان در توحید باری تعالی اتفاق دارند و عالم را مخلوق میدانند و اقوار بنگاهی عالم و جزای اعمال نیک و بد و حشر و حساب دارند - و در علوم عقلی و نقلی و ریاضات و معاهدات و تحقیق معارف و مکاشفات اینها را یدِ طولی است - و عقلای اینها فرصت عمر آدمی را چهار حصّه قرار داده - حصّه اول در تحصیل علوم و دویم در تحصیل معاش و اولاد و سیوم در تصحیح اعمال و ترویض نفس و چهارم در مشق انقطاع و تجرّد که غایت کمال انسانی است و نجات کبری که آنها مهابکت بران موقوف است صرف نمایند - و قواعد و ضوابط دین اینها نظم و نسق تمام دارد - پس معلوم شد که دین موصی بوده است و منسوخ شده - و از ادیان منسوخ غیر از دین یهود و نصاری نسخ دینی دیگر در شرع مذکور نیست - حال آنکه نسخ بسیار در معرض محو و ثبات آمده - و باید دانست که بحکم آیه کریمه **وَ اِنْ مِنْ اُمَّةٍ فِیْهَا نَبِیٌّ** - و کریمه **وَ اِکُلِ اُمَّةٍ رَّسُولٌ** - و آیات دیگر در ممالک هندوستان نیز بعثت انبیا و رسل علیهم السلام واقع شده است - و احوال آنها در کتب اینها مضبوط است - و از آثار آنها ظاهر میگردد که مرتبّه کمال و تکمیل داشته اند و رحمة عامه رعایت مصالح عباد را درین مملکت وسیع نیز فرو نگذاشته - و پیش از بعثت خاتم الرّسل صلی الله علیه و سلم در هر قومی پیغمبری مبعوث شده - و اطاعت و انقیاد همان پیغمبر بران قوم واجب بوده نه اتباع پیغمبر قوم دیگر - و بعد ظهور پیغمبر ما که خاتم المرسلین است صلی الله علیه و سلم و مبعوث است بکافّه آنان و دین او ناسخ ادیانست شرقاً و غرباً احدی را تا انقراض زمان مجال عدم انقیاد وی نمانده - پس از آغاز بعثت او تا امروز که هزار و صد و هشتاد سال است هرکه باوی نگرویده کافر است - نه پیشینیان - و چون شرع بحکم آیه **مِنْهُمْ مَنْ قَضَصْنَا عَلَیْكَ وَ مِنْهُمْ مَنْ لَمْ نَقْضِصْ عَلَیْكَ** - از بیان احوال اکثر اینها ساکت است در شان انبیای هند سکوت اولی است - نه مازا جزم

بکفر و هلاک اتباع آنها لازم است و نه یقین به نجات آنها بر ما واجب - و مادّه  
 حسنی ظنّ متحقق است بشرط آنکه تعصب درمیان نباشد - و در حقّ اهل فارس  
 بلکه اهل هر مملکت که پیش از ظهور خاتم الرّسل گذشته اند و لسان شرع از  
 احوال آنها ساکت است و احکام و آثار آنها مناسب و موافق مسلک اعتدال است  
 همین عقیده اولی است - و کافر گفتن کسی بی دلیل قطعی اسان نباید  
 دانست - و حقیقت بت برستی اینها آنست که بعض ملائکه که بامر الهی در  
 عالم کون و فساد تصرّفی دارد یا بعض ارواح کمالان که بعد ترک تعلّق اجساد  
 آنها را درین نشاء تصرّفی باقیست یا بعض افراد احیا که بزعم اینها مثل حضرت  
 خضر زنده جاوید اند - صور آنها ساخته متوجّه بانها میشوند - و بسبب این  
 توجّه بعد مدّتی بصاحب آن صورت مناسبت بهم میروسانند و بنابراین مناسبت  
 حوائج معاشی و معادّی خود را روا میسازند - و این عمل مشابهتی بذکر رابطه  
 دارد که معمول صوفیّه اسلامیّه است که صورت پیر را تصوّر میکنند و فیضها  
 بر میدارند - اینقدر فوق است که در ظاهر صورت شیخ نمی تراشند - و اینمعنی  
 مناسبتی بعقیده کفار عرب ندارد که آنها بتان را متصرف و موثر بالذات میگویند  
 نه آله تصرّف الهی - و اینها را خدای زمین میدانستند و خدایتعالی را خدای  
 آسمان - و این شرک است - سجده اینها سجده تحیّت است نه سجده عبودیت  
 که در آئین اینها بمادر و پدر و پیر و استاد بجای سلام همین سجده مرسوم  
 و معمول است که انرا کذّوت میگویند - و اعتقاد تناسخ مستلزم کفر نیست  
 والسلام \*

## APPENDIX I (B).

p. 26. میفرمودند روزی شخصی در حضور ایشان (یعنی حاجی محمد

افضل رح) گفت که در خوابی دیده‌ام که صحرایی است پیر از آتش و کشن  
 درون آتش است و رام چادر در کناره آن آتش - شخصی در تعبیر آن خواب  
 گفت که کشن و رام چندر از کبرای کفار اند در آتش دوزخ معذب اند - فقیر  
 گفتم اینخواب را تعبیری دیگر است - بر شخصی معین از گذشتگان بی آنکه

کفر او از شرع ثابت شود حکم بکفر جایز نیست - از احوال این هر دو کتاب و سنت مساکت است - و بمقتضای آیه شریفه **وَإِنْ قَرَيْتَ إِلَّا خَلَا فِيهَا نَذِيرٌ** - ظاهر است که در این جماعه نیز بشیوهی و نذیری گذشته باشد - در این صورت محکم است که ایشان ولی یا نبی باشند - رام چذدر که در ابتدای خلقت جن پیدا شد در آنوقت عمرها دراز و قوتها بسیار بود اهل زمانه را به نسبت سلوکی تربیت میکرد و کشتن آخرین بزرگان اینهاست و در آن وقت نسبت به سابق عمرها کوتاه و قوتها ضعیف گردید - پس اهل زمانه خود را به نسبت جذبی هدایت میکرد - کثرت غذا و سماع که از وی منقول است دلیل است بر ثوق و شوق نسبت جذبه - پس حرارت‌های نسبت عشق و محبت بصورت صحرای آتش نمودار شد - کشتن که مستغرق کیفیتهای محبت بود درون آتش ظاهر گردیده - و رام چذدر که راه سلوک داشت در کنار آن پدیدار شد و الله اعلم - حضرت حاجی صاحب رحمة الله علیه بسیار پسندیدند و ازین تعبیر خوش شدند \*

گفت فقیر راقم ابو صالح خان از خلفای حضرت حاجی صاحب رحمة الله علیه در زمین متهم را رفته بود - حاجتی داشت که بهفت رویه سرانجام میشد - شبی نماز تهجد میکرد - شخص بهیبت کشتن که هذود بیان کرده اند ظاهر شد - تذکبه و سلام گفت و مبلغی پیش نهاد - وی گفت باش تا از نماز فارغ شوم - بعد از ادای نماز پرسید که نام تو چیست - گفت کشتن و این هفت رویه ضیافت شماست که در زمین ما آمده اید - گفت من محمدیم و محمد مصطفی ص پیغمبر ما وسیله برآمد حاجات ما کافی است - ما هدیه بیگانه نمیگیریم وی بگریست که ما وصف نبی آخر الزمان و اخلاص و اتباع او صلی الله علیه و سلم شنیده بودیم زیاده از آن مشاهده کردیم \*

## APPENDIX II.

(Sirr-i-Akbar, being the translation of Upanikhat, by  
Dara-Shikōh.)

## سر اکبر ترجمہ اپنیکھت

### از دارا شکوه

اوم شرعی کنیشامی نمہ

حمد ذاتی را کہ نقطۂ باء بسم اللہ در جمیع کتب سماوی از اسرار قدیم  
اوست و الحمد کہ اوم الکتاب است در قرآن مجید اشاره باسم اعظم اوست  
و جمیع ملایک و کتب سماوی و انبیاء و اولیاء ہمہ مندرج درین اسم است  
دیباچہ - اما بعد چون فقیر بی اندوہ محمد دارا شکوہ در سنہ ہزار و پانچا  
ہجری کہ بکشمیر جنت نظیر رفتہ بود بجاذبۂ عنایت الہی و فضل لا متناہی  
سعادت ارادت اکمل کاملان و زیدۂ عارفان و استاد استادان پیر پیروان و پیشوای  
پیشوایان مرشد حقایق آگاہ حضرت ملا شاہ سلمہ اللہ دریانت چون ذوق دیدن  
عارفان ہر طایفہ و شنیدن سخنان بلند توحید بہر سیدہ بود اکثر کتب تصوف بنظر  
در آورده و رسالہ ہا تصنیف کردہ بود و تشنگی طلب توحید کہ بحر یست بی نہایت  
دسمدم زیادہ می شد و مثلہای دقیق بخاطر می رسید کہ حل آن جز بکلام  
الہی و اسناد ذات لا متناہی امکان نداشت در قرآن مجید عظیم و فرقان کریم  
اکثری مرموز است امروز دانندہ آن رمزها کمیاب خواست کہ جمیع کتب  
سماوی را بنظر در آورده تا از ہمہ کلام الہی کہ خود تفسیر خود است اگر در  
کتابی مجمل باشد در کتاب های دیگر مفصل یافتہ شود و از آن تفصیل آن اجمال  
دانستہ می شود نظر بر توریث و انجیل و زبور و دیگر مصحف انداخت اما  
بیان توحید در انجا مجمل و مرموز بود و از ترجمہ های سہلی کہ اہل غرض  
کرده بودند مطلوب معلوم نگردیدہ در پی آن شد کہ از چہ جهت در  
ہندوستان وحدت عیان گفتگوی توحید بسیار است و عملہای ظاہری و باطنی  
طایفہ قدیم ہند را بر وحدت انکاری و بر موحدان گفتاری نیست بلکہ پایہ اعتبار

است بر خلاف جهلای این وقت که خود علم‌ها را قرار داده اند در بعی قتل و ازار و تکفیر و انکار خدا شناسان و موحدان افتاده جمیع سخنان توحید را که از فرقان حمید و احادیث صحیحۀ نبوی ظاهر ست <sup>۱</sup> را می نمایند و راه زنان راه خدا دانند بعد از تحقیق این مراتب معلوم شد که در میان این قوم قدیم پیش از جمیع کتاب آسمانی که رک بید و ججر بید و سام بید و اتهر بن بید باشد بر ابنای آن وقت که بزرگترین آنها برهما که آدم صفی الله است با جمیع احکام نازل شده و این معنی از همین کتاب‌ها ظاهر ست و خلاصه این چهار کتابها که جمیع اسرار سلوک و اشغال توحید صرف دران مندرج است انرا اپنکھت می نامند و ابنای آنزمان او را جدا ساخته بران تفسیرها بشرح و بسط تمام نوشته اند و همیشه انرا بهترین عبادت دانسته میخوانند و این جوی خود مبین را چون نظر بر اصل وحدت ذات بود نه بزبان عربی و سریانی و عراقی و سہنس کرت خواست که اپنکھت‌ها را که گنجی توحید بود و داند-دگان ان دران قوم هم کم مانده اند نه <sup>۲</sup> بزبان فارسی بی کم و زیاد و بی عرض نفسانی عبارت راست بر است لفظاً بلقظ ترجمه نموده بفہم این جماعہ کہ انرا از اہل اسلام اینقدر پوشیدہ و پنهان میدارند دران چه سر است چون درین ایام بلدہ بنارس کہ دار العلم این قوم است تعلق باین حق جوی داشت و پندتان و سنیاسان را کہ سر آمد وقت بیدہ اپنکھت دان بودند جمع ساخته و خود این خلاصہ توحید را کہ اپنکھت‌ها یعنی اسرار پوشیدنی باشد و منتہای مطلب جمیع اولیاء الله در سنہ ہزار و شصت و ہفت ہجری بیغرضانہ ترجمہ نمودہ ہر مشکلی و ہر سخن بلندی کہ میخواست طالب ان میبود می جست و نمی یافت و ازین خلاصہ قدیم کہ بی شک و شبہ اولین کتاب سماوی و سرچشمہ تحقیق بحر توحید است و مطابق قرآن مجید بلکہ تفسیر آنست صریح و ظاہر میشود کہ این آیت بعینہ در حق این کتاب قدیم است کہ <sup>۳</sup> *انہ لقرآن کریم فی کتاب*

<sup>۱</sup> As in the original رو is probably رد

<sup>۲</sup> نه is apparently superfluous.

مَکُونُ لَا یَمْسُهُ إِلَّا الْمَطْهُرُونَ - تَنْزِيلٌ مِنْ رَبِّ الْعَالَمِينَ - یعنی قرآن  
 کریم در کتاب است و آن کتاب پنهان است و او را درک نمیکند مگر دلی که مطهر  
 باشد و نازل شده از پروردگار عالم و عالمیان مشخص و معلوم میشود که این آیت  
 در حق زبور و توریت و انجیل نیست بلکه از لفظ تنزیل چنین ظاهر میگردد که  
 در حق لوح محفوظ هم نیست و چون اینکتهت که سر پوشیدنی ست و اصل این  
 کتاب ست و آیت های قرآن معجید بعینه در آن یافت میشود پس تحقیق که کتاب  
 مکنون این کتاب قدیم باشد و ازین این فقیر نادانستنی ها دانسته و ناهمیده ها  
 فهمیده و بغیر از منتفع شدن خود و اولاد و دوستان خود و طالبان حق  
 مطلبی و مقصودی نبوده سعادت مندی که غرض نفس شوم را گذاشته  
 خالصاً لوجه الله این ترجمه را که بسراکبر موسوم است ترجمه کلام الهی  
 دانسته فقره بفقره برابر انگاشته ترک تعصب نموده بخواند و بفهمد بیروال  
 و بیخوف و بی اندوه درستکار و موید خواهد شده - تفسیر اوم الله و پونو نام  
 همین اسم است یعنی حکم کننده سرها ست برهم آفریدگار ایشر صاحب نراین  
 ذاتی که او در همه است و همه دروست ست چنانکه هستی و علم و سرور  
 لوک عالم بر همه لوک عالم ذات برهما لوک سدره المنتهی که مقام جبوتیل  
 است<sup>۱</sup> \*

<sup>1</sup> Other definitions are continued in Asiatic Society of Bengal's  
 (Government Second Collection) No. 154.

20. Life and letters of Malik 'Aynu'l-Mulk Māhrū, and  
side-lights on Firūz Shāh's expeditions to  
Lakhnauti and Jājnagar.

By MAULAVI 'ABDU'L WALI, *Khan Sahib*.

Lately I re-examined the Bengal Asiatic Society's Persian Manuscript, No. F. 11 entitled "The *Inshā-i-Māhrū*," by the publication, in the Royal Asiatic Society's Journal, of a short note by W. Ivanow.<sup>1</sup> The "*Inshā-i-Māhrū*" or more correctly, the *Tarassul-i-'Aynu'l-Mulkī*, bears the seal of Tipū Sultān's Library of Siringāpatam. This manuscript together with a large number of valuable manuscripts were once kept in the now defunct "College of Fort William" and transferred to the Asiatic Society on the abolition of the College. The *Inshā* consists of about 270 folios of Octavo size, written in a peculiar *Shikista* character. The scribe has noted under or beside each difficult or unusual word its meaning in Persian. There are several *lacunæ*. Seven folios from the beginning are missing. The seal of the College of Fort William is affixed, on folio 8. The manuscript is in an indifferent condition.

The *Inshā*, as will be seen, later, used once to be extensively read, but I doubt if another copy of it can now be procured in India. The high flown despatches and letters of Akbar, embodied in Abu'l Fadl's *Inshā*, and the inimitable *Ruq'āt* of Aurangzib-'Alamgīr, as well as many other similar attempts have nearly displaced and made obsolete the previous epistolary style. Yet how much similarity is to be found in both. The student of Persian letters as well as of medieval history of Turkish Sultāns of India will, I daresay, find many side-lights in 'Aynu'l-Mulk's quaint pages. 'Aynu'l-Mulk's letters are in certain respects complementary to his two contemporaries—the authors of the *Tārikh-i-Firūzshāhī*. Contemporaneous to the celebrated Nizāmu'd-Dīn Auliyā, and two of the most famous Persian poets—Amīr Khusrau and Amīr Hasan—and sovereigns of such diverse character as 'Alau'd-Dīn Muhammad Shāh Khalji, Qutbu'd-Dīn, Ghiyathu'd-Dīn Tughluq, Muhammad bin Tughluq and Firūz Shāh Sultān, the letters and despatches of Malik 'Aynu'l-Mulk and Ziyā-i-Barain's and Shams-i Sirāj Afif's history cannot but give a lively interest to the searchers of valuable informations on social, political,

<sup>1</sup> 'Letters of Māhrū' by W. Ivanow, J.R.A.S., October 1922, pp. 579-80. His assertion that several letters are addressed to Hasan Gangau, the founder of the Bahmanide dynasty in Deccan does not appear to be correct.

ethnological and religious matters. Our debt of gratitude is due to Sir Henry Elliot and Professor Dowson for their translating both the volumes of *Tārīkh-i-Firūz Shāhī* into English, however, incomplete the rendering might be. But one must study the books in the original to fully grasp the spirit and history of the age.

I have divided this paper into three parts, viz.—

- I. Life of Malik 'Aynu'l-Mulk *Māhrū*.
- II. A brief notice of *Māhrū*'s letters.
- III. Some corroborative or additional account of *Firūz Shāh*'s expeditions to Lakhnauti and Jājnagar.

#### PART I.

##### *Life of Malik 'Aynu'l-Mulk Māhrū.*

The writer of these letters is called by his contemporaries as well as by himself 'Ayn-i-Māhrū, 'Aynu'l-Mulk, 'Aynu'd-Dīn, or 'Abdu'llāh. In one of the letters, the writer introduces himself as 'Abdu'llāh Muḥammad Sharaf *al-mad'ū ba* (commonly called) 'Ayn-i-Māhrū. In an official *Manshūr* (royal mandate or patent), when he was appointed by *Firūz* to the *aqla* (fief) of Multān, his titles read as follows: Malik'ush—Sharq wa'l—Wazarā 'Aynu'l-Mulk 'Aynu'd-Daula wa'd-Dīn Qāmi'ul kafarat i-Wa'l mushrikīn Qālī'ul-Fajarat i wa'l mutamarridīn m'adanu'l-Fadāil, Jām'i'us-Saif i wa'l-Qalam, Wāliu'l-'ilm i wa'l-'alam, Sajjadār i Irān, Dastūr i āfāq 'Abdu'llāh Māhrū, Makkanah'ullāh.

(ملك الشرق و الوزرا عين الملك عين الدولة و الدين قانع الكفرة و المشركين  
قانع الفجرة و المتمردين معدن الفضائل جامع السيف و القلم والي العلم  
و العلم سجدار ايران دستور آفاق عبد الله ماهر و مكنه الله)

He is often called by his contemporary historians as *Malik 'Aynu'l-Mulk Mullānī* and sometimes without the prefix (Malik) and suffix (Multānī). It may be that 'Aynu'l-Mulk's father was Muḥammad Sharaf and that he was born and brought up in Multān. I think *Māhrū* was his family name.

In his private letters *Māhrū* calls his sons 'Imādu'd-Dīn, Hamīdu'd-Dīn, 'Sadu'd-Dīn and Karīmu'd-Dīn, and his brothers, Fakhr'u'd-Dīn, Mu'azzamu'd-Dīn, and Nizāmu'd-Dīn.

His name occurs for the first time among the list of grandees of 'Alāu'd-Dīn Muḥammad Shāh Khaljī (695–715 H. = 1295–1315 A.D.), prefixed to the opening Chapter, in Maulana Ziyāu'd-Dīn Barani's *Tārīkh-i-Firūz Shāhī*, p. 241, Bibliotheca Indica edition, as Malik 'Aynu'l-Mulk Multānī. During this reign four revolts—from the revolts of new Muslim

Barani's references  
to 'Aynu'l-Mulk.

converts of Gujrāt to that of Hājji Maula—had taken place, one following quickly the other. These insurrections and revolts roused the Sultān from his sleep of security and lethargy and awakened him from stupor. While busily engaged in reducing the fort of Ranthanbhor, the Sultān used to have constant private consultations with Malik Hamīdu'd-Dīn, Malik A'azzu'd-Dīn (sons of 'Alā Dabīr) and Malik 'Aynu'l-Mulk Multānī—each of whom, according to the estimation of the historian was as Āṣaf (Wazīr of Solomon) and Buzur Che Mihr (Wazīr of Khusrau Naushīrwān) and also other wise men. The Sultān made them seated before him and consulted them as to the real cause of the revolts. After consultations for some days, these great men gave their opinion thus: Ignorance of the Sultān as to the real affairs—good or bad—of the people; free interchange of views during drinking carnivals held by His Majesty, when secrets are given expression to, enabling the courtiers to take part therein; intimacy and intercourse of maliks and amīrs with each other, producing a kind of *esprit de corps*, even against the Sultān; and lastly the wealth the possessors thereof employ towards riots and rebellions. These causes were reported to His Majesty in guarded phraseologies, enough to put him on his guard. The Sultān, as it appears adopted the views of the councillors (p. 282-83 *idem*).

It was a high compliment to young 'Aynu'l-Mulk to be included among the wise, during the siege of Ranthanbhor.

When Sultān 'Alau'd-Dīn put a stop to the incursions of the Mughuls, and all the revolts and insurrections were put down, he brought under his immediate administration such territories or provinces that had so long been outside the annexed territory. He appointed for this purpose trusted and able *Muqtās* or Governors, e.g. Bālī Khān, Tajū'l-Mulk Kāfūrī, Ghaz Malik, otherwise known as Tughluq Shāh, etc. Of these 'Aynu'l-Mulk Multānī received the charge of the fiefs of Dhār and Ujjain (p. 323 *idem*).

Despite Sultān 'Alau'd-Dīn's cruelty towards the new Muslims, Hindūs and Buddhists (Budhgān بدهگان), the Civil and Military administrators of the realm were picked men, who carried on the affairs of Government efficiently and who maintained the stability of the State. These the historian divides into three divisions. The first and most prominent of these were: Ulugh Khān, Nuṣrat Khān, Zafar Khān, Alp Khān, etc. In the second division were such men as Malik Hamīdu'd-Dīn, Malik A'azzu'd-Dīn, and Malik 'Aynu'l-Mulk Multānī, who was the Dabīr or writer to Ulugh Khān (pp. 336-37 *idem*). This clearly shows that 'Aynu'l-Mulk was employed at one time at the Secretariat under Ulugh Khān to draft despatches and letters.

In the next reign, that of Sultān Quṭbu'd-Dīn Mubārak Shāh (716-720 H = 1316-1320 A.D.) the name of Malik 'Aynu'l-

Mulk Multānī is placed among the grantees as Wazīr of Deogīr (p. 379 *idem*).

In the first year of Sultān Qutbu'd-Dīn's reign Alp Khān had revolted and slain Malik Kamālu'd-Dīn Gurg; and Gujrat was alienated from the Imperial sway. Malik 'Aynu'l-Mulk Multānī, who (according to Ziyā-i-Barāni) was an unrivalled counsellor, had travelled extensively, a ripe experienced man, distinguished in understanding as well as in executing affairs (of State), was sent to Gujrat, at the head of a large army. This army from Dihli included several distinguished grantees. The revolutionists were defeated, and Alp Khān's forces and revolvers were dispersed. By the wisdom of 'Aynu'l-Mulk and the valour of the Dihli army, Nahrwala and the entire province of Gujrat were reduced to subjection (p. 388 *idem*).

This shows 'Aynu'l-Mulk as a wise man, who could handle a formidable army, in the encounter with a great revolutionist. Sultān Qutbu'd-Dīn appointed Zafar Khān Viceroy of Gujrat.

Shortly after this, Zafar Khān, the able and experienced Governor, was killed without any offence, and the Emperor was thus instrumental in uprooting the foundation of the Empire. Qutbu'd-Dīn cast aside all regard for decency; gave up prayer and fasting, donning female trinkets and apparel. Malik 'Aynu'l-Mulk Multānī, one of the greatest nobles of the time as well as Malik Qarā Beg, holder of fourteen offices, were assailed with filthy and disgusting abuse by sportive theatrical women from the roof of the Hazār-Sutūn palace, such as none thereof had heard like that before (p. 396 *idem*).

The above shows the estimate of Malik 'Aynu'l-Mulk's character and eminence by one of the most impartial historians, and the disgraceful conduct of the ungrateful sovereign.

After the execution of Zafar Khān, the Sultān appointed in his place Zafar Khān's maternal uncle, Husāmu'd-Dīn, a Barwāri slave and renegade—a favourite of Qutbu'd-Dīn. Husāmu'd-Dīn collected his kinsfolk, turned apostate and stirred up a revolt. The nobles of Gujrat made him a prisoner and sent him to Dihli. The Sultān gave him a slap, and made him, soon after, his companion. This made the nobles of Gujrat disgusted, as they became very much afraid. The Sultān appointed Wahidu'd-Dīn Quraishī, a very able man of good family, Viceroy of Gujrat with the title of Sadru'l-Mulk.

Similarly Malik Yak Lakhi 'Alā'ī (of Sultān 'Alāu'd-Dīn's time), Wazīr of Deogīr,<sup>1</sup> revolted. On receipt of the news an army was despatched from Dihli to Deogīr, Yak Lakhi and his confederates were arrested, bound and sent to the Sultān. The Sultān had Yak Lakhi put into triangles, his ears and nose cut off, and publicly disgraced. His confederates were

<sup>1</sup> Deogīr was the Capital of Mālwa—Ibn Baṭṭa.

also punished. Malik 'Aynu'l-Mulk was appointed *Wazīr* (Viceroy) and Malik Tājū'l-Mulk *Ashraf* (accountant), and Mukhbīru'd-Dīn Abū Rajā, *Nāib-i-Wazīr*, of Deogīr. These appointments were appropriate though unexpected, as His Majesty was too much intoxicated with his power. As these men knew their duties and were willing, they settled Deogīr, regulated the forces and tribute (pp. 397-8).

When Khusrau assassinated Sultān Qutbu'd-Dīn and usurped the throne, under the title of Sultān Nāsiru'd-Dīn, he bestowed high titles to his Hindu relatives and others; and to keep up a delusive show and to propitiate the men of the reigns of 'Alāu'd-Dīn and Qutbu'd-Dīn, he dubbed 'Aynu'l-Mulk Multāni, who had no kind of connection with him, with the title of 'Alam Khān (p. 410 *idem*).

In the encounter which ensued, soon after between Khusrau Khān and his supporters and Ghazi Malik (afterwards Sultān Ghiyāthu'd-Dīn Tughluq Shāh) and his son Fakhrū'd-Dīn Juna *alias* Sultān Muhammad Shāh, Khusrau was defeated and beheaded. When Ghazi Malik, accompanied by his chosen veterans, encamped in the vicinity of Indarpat, 'Aynu'l-Mulk Multāni deserted Khusrau Khān and went towards Ujjain, and Dhār. 'Aynu'l-Mulk's defection, on the day of battle, broke down the heart of Khusrau Khān and Khusrau Khānis, that is, the supporters of Khusrau Khān's cause (p. 419 *idem*).

As usual the name of Malik 'Aynu'l-Mulk appears on the opening page of Sultān Ghiyāthu'd-Dīn Tughluq's Sultānat (720-725 H = 1320-1325 A.D.) as one of the Umarā, without the territorial designation of Multāni (p. 424 *idem*).

In the next reign, that of Sultān Muhammad Shāh (725-752 H = 1325-1351 A.D.), the name appears as Malik 'Aynu'l-Mulk Māhrū. The *sobriquet* Māhrū (moon-faced) is suffixed for the first time by Maulānā Ziyāu'd-Dīn Barani (p. 454 *idem*). The reign of Sultān Muhammad Shāh was clouded by frequent revolts and insurrections and a terrible famine caused by his exactions and by the cessation of rain. When at last Muhammad Shāh saw that there were no means of providing against the scarcity of grains and fodder in the City (of Dihli), and there could be no cultivation without the fall of rain, he permitted the wretched inhabitants of the Capital to remove towards Hindustān with their family. The people took full advantage, and the Sultān too left Dehli and halted a little beyond *Khud* (Khur), on the Ganges with his army. His men constructed *chhappars* or booths, close to the cultivated lands. To this place he gave the Hindu name of Sargdwari (Heaven's gate). As grain arrived there from Oudh, their price became cheaper than that of the City.

At a time when Sultān Muhammad was staying at Sargdwari, Malik 'Aynu'l-Mulk was in charge of the United Prov-

inces of Oudh and Zafarabād.<sup>1</sup> Here his brothers had gained victories over rebels, and secured the obedience of both the *aqṭ'as* or fiefs. Malik 'Aynu'l-Mulk and his brothers despatched both to Sargdwari and Dihli grains and cash and other goods to the value of seventy lakh tankas, which enhanced the Sultān's opinion about 'Aynu'l-Mulk's uprightness, as they relieved the great tension caused by the famine.

While 'Aynu'l-Mulk and his brothers were doing their duties so splendidly in Oudh and Zafarabād, the Sultān was more than once apprised as to the mismanagement, by Qutluḡ Khān, of the affairs of Deogīr, where revenue had decreased by his rapacity. Sultān Muhammad, under the circumstance, wished to bestow on 'Aynu'l-Mulk the Wāzarat (Governorship) of Deogīr, and to send him and his brothers with their adherents and followers there, and to recall Qutluḡ Khān with his retenue and followers to Dihli. Before the proposal materialised, Malik 'Aynu'l-Mulk and his brothers came to know of it, and became apprehensive of Sultān's treachery. They were led to this view for the following reasons: They had enjoyed, for some years, the administrations of those tracts; many nobles and great men, specially officers of the City had left, apparently through the dearness of grains, but really owing to the fear of Sultān's harsh discipline, and gone to Oudh and Zafarabād, with their family and children. Some of them became enlisted in the service of 'Aynu'l-Mulk and his brothers, while to others were assigned villages, as tenures, and through fear of the Sultān's punishment, they threw themselves on the protection of the Malik brothers. These were repeatedly brought to the notice of the Sultān. His Majesty found the question too complex to solve. The fact that his Majesty's mind was irritated towards them, was never given out, but kept to himself, till one day, while at Sargdwari, he despatched an order that several notables and men of business capacity and those who had run away from Dihli to escape punishment should be seized and sent to His Majesty at Dihli; and also all such other persons who had repaired to his government must, by all means—whether willing or not—be sent back to Dihli. This order and the intelligence of Sultān's displeasure filled 'Aynu'l-Mulk and his brothers with fear. They thought that to send them towards Deogīr was but a

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<sup>1</sup> In the reign of Sultān Ghiyathu'd-Dīn Tughluq Manaichh was the Chief Town of the District which later was to include the Capital of Sharqī Kings. In 721 H. (1321 A.D.), the Sultān's son, Zafar seized Manaichh, which was given him as a fief and the name of the town altered to Zafarabād, J.A.S.B. Vol. XVIII, 1922 (Numismatic Supplement No. XXXVI). As 'Aynu'l-Mulk was the Governor of Oudh and Zafarabād, and as the latter was the Capital of Sharqī Kingdom, he was styled so I believe, *Malik'ush-Sharq*.

pretext to perfidiously destroy them, when there. They became therefore ill-disposed and thought of revolt.

During the interval, when the Sultān was in the Capital, and thence had been to Sargdwari, four revolts were quickly put down, and Sultān Muḥammad won victory over the rebels. The first revolt was by Nizām Mā'in, a *bhang*-eating manikin of mean origin, who had obtained the fief of Karra for several lakh of tankas, by bragging and talking vain-gloriously. He left for his headquarters, tried his best, but since he had no means, men or position in society, he could not get any benefit out of his *muqāti'a* (fief), and could not realize a tithe of what he had executed a Bond (*khat*)<sup>1</sup> for. He bought a few slaves, clandestinely, gathered a few *bhang*-eating *paiks*, and with these raised the standard of revolt, took Chatr (royal umbrella) and proclaimed himself king, under the title of Sultān 'Alāu'd-Dīn. When the news reached the Capital and before an army from Dihli was told off, Aynu'l-Mulk with his brothers marched from Oudh with troops, arrived at Karra and suppressed him. Nizām Mā'in was flayed and sent to the Sultān at the Capital. Such was the signal service rendered by 'Aynu'l-Mulk, before any order from the Sultān was received. The Shaykhzāda of Bistām, who was the husband of Sultān Muḥammad's sister, was nominated to Karra as holder of the fief, but he failed to punish and apprehend the rebels, who had supported Nizām Mā'in.

I need not dilate on the *second* revolt of Shihāb Sultāni entitled Nuṣrat Khān, at Bidar who had given *Khatt-i-qabūli*,<sup>2</sup> (or as is commonly called *qabuliyat*) for a large sum, but could not realize it; and the *third* revolt after a while of 'Alī Shāh sister's son of Zafar Khān 'Alā'i (ennobled by Sultān 'Alāu'd-Dīn) at the same Bidar and at Gulbargah. Both these risings were put down by Qutluḡ Khān whom the Sultān had sent for the purpose. The *fourth* revolt, which took place at that time, was the revolt of 'Aynu'l-Mulk and his brothers at Sargdwari. Although 'Aynu'l-Mulk was an old favourite and esteemed courtier of Sultān Muḥammad, yet he was always apprehensive of His Majesty's fickleness of mind, and excess and ferocity of temper: and in his opinion and consideration, he thought himself on the verge of destruction. With His Majesty's permission, he asked his brothers to come with the force of Oudh and Zafarābād. They came and stayed a few miles off Sargdwari. One night suddenly 'Aynu'l-Mulk rushed forth from Sargdwari and joined his brothers and the force of Oudh and Zafarābād. His brothers with three to four hundred horse

<sup>1</sup> *Khat* or *Khatt* means a letter or a document. In Registration offices and Courts of Bengal a simple Money Bond is still called a *Khat*; *Khatt-i-Qabūli* was what we call a *Qabuliyat* or Lease executed by a tenant.

<sup>2</sup> Vide the above note 1.

arrived near the ford of the river Ganges on the side of Sargdwari, and carried off the elephants, and the herds of horses, that were grazing on the ford, to their army camp. A serious commotion arose at Sargdwari. His Majesty called the forces of Samāna, Amroha, Bāran, and Kol (to his aid), and at that time a force from Ahmadabad came there. The Sultān remained, a few days at Sargdwari and became well equipped. He then marched towards Kanauj, and encamped, with his forces on its suburbs. 'Aynu'l-Mulk and his brothers—who knew nothing of the tactics of war, fighting or bravery, and had no experience thereof compared with Sultān Muḥammad and his father and uncle, who had bravely fought twenty battles with the army of the Mughulistān and Khurāsān in which they came victorious, and who bought back the Capital of Dihli with the thrust of sword, arrow, axe, battle-axe and *Chaqmār*<sup>1</sup> from Khusrāu and Khusrāu-Khānīs, from the Hindus and Barwārs—arrayed their troops against the Sultān. From their extreme inexperience and foolishness they crossed the Ganges below Bangarmau towards Talah, Sanahi, and Mazraba and marched upwards. They were under the impression that owing to the severity of the Sultān's vengeance, and people's dislike of his rule, the army would desert the Sultān, who and whose forefathers were their patrons, and would join those scribes and grocers (i.e. civilians whose profession was not war) who knew nothing of what a bridle or a crupper was like. 'Aynu'l-Mulk and his brothers, with a view to give battle, came to the front line (of Sultān's troops); and those unmanly men, wanting in foresightedness, came at the dead of night opposite the Sultān's forces, and commenced throwing arrows. As the morning was about to dawn, one division of Sultān Muḥammad's army charged them and routed and scattered their troops, even at the first charge. 'Aynu'l-Mulk was taken prisoner, and the forces of the enemy were pursued up to thirteen or fourteen *Kos*, with the result that many of their cavalry and infantry were killed, and both the brothers of 'Aynu'l-Mulk, who commanded the force fell in the fight. Their troopers, for fear of their life, threw themselves into the Ganges and many of them were drowned. The pursuing troops obtained immense booty. Such of the cavalry and infantry, that escaped from the Ganges water (watery grave), fell in brotherly love (مواست) into the hands of the Hindus, and lost their horses and arms.

As to 'Aynu'l-Mulk, Sultān Muḥammad did not order for punishment, but expressed that there was no guilt in his nature; but this incident had been brought about through

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<sup>1</sup> *Chaqmar* is in the text, but the correct word seems to be *Chaqmaq* (چاقماق), a flint or agate to strike fire with or for a gunlock.

inadvertance. He was experienced, competent, and skilful. He was set free. After awhile His Majesty sent for 'Aynu'l-Mulk, treated him well, gave him a robe, and bestowed on him a high office, and showed him great indulgence. His sons and the remainder of his household were restored to him.

After this revolt was suppressed, His Majesty resolved on going to Hindustān from Bangarmau. He went to Bahrāich, paid his devotion to the tomb of Salār (Commander) Mas'ūd the Martyr, who was one of the warriors of Sultān Maḥmūd Subuktāgīn, and gave alms to the custodians of his shrine. At Bahrāich, he appointed Aḥmad Ayāz and sent him ahead, to guard the road to Lakhnauti and to stay there to prevent the fugitives of 'Aynu'l-Mulk's force and those of Oudh and Zafarābād, who had gone over to him, in the late revolt, from proceeding to Lakhnauti. He was also ordered to send home those who had gone to Oudh and Zafarābād and settled there, either owing to famine or fear of his Majesty's punishment. Sultān Muḥammad then returned to Dihli (pp. 485-491 *idem*).

From the account of Ibn-i-Baṭūṭa, Wolsely Haig has deduced that Sargdwari was founded in 1337 and that the revolt of 'Aynu'l-Mulk took place in 740 H. or 1339-40 A.D.<sup>1</sup>

In the 7th Chapter, Ziyā-i-Barani gives a list of eminent men, whom Sultān Muḥammad Shāh Tughluq trusted for the administration of his government. Of Malik 'Aynu'l-Mulk, Ziyāu'd-Dīn (p. 584) writes: Another one whom the due discharge of His Majesty's work has raised; and who has been favoured with manifold considerations; and on whom the *aqṭ'a* or the feudal tenure of Multān is assigned, is Malik 'Aynu'l-Mulk Māhrū. He is amiable in character, skilful in business, suitably prudent, and well-known in verity of judgment. He is an eminent scholar of the highest character and benevolent disposition. To promote and favour such a man are tantamount to doing a thing in its proper place. He is prominent in birth and eminent in rank, one of the few whom Firūz Shāh has promoted and made a favourite of him. The fief of Multān has been assigned to him. His Majesty's favours (may God perpetuate his kingdom and his sovereignty) upon him are more than can be mentioned.

The above is all that the historian, Ziyāu'd-Dīn mentions of Malik 'Aynu'l-Mulk. He finished his history in 758 H. (1356 A.D.) The supplementary volume of the *Tārikh-i-Firūz Shāhi* continued by Shams-i-Sirāj 'Afif, published by the Bengal Asiatic Society, Bibliotheca Indica series, 1890, gives a long account of the Malik, and throws, some

<sup>1</sup> "Five questions in the History of the Tughluq dynasty of Dihli" by Wolesly Haig, J.R.A.S. for 1922, pp. 319-372.

light on the last mentioned incident, viz, how 'Aynu'l-Mulk was restored to Sultān Muḥammad Shāh Tughluq's favour, after his ill-fated revolt, as also the part he took in the administration under Firūz Shāh as-Sultān (752-790 H. = 1351-1388 A.D.). The account occupies 13 pages in print (pp. 406-418). I have left out the historian's repetitions and reiterations of the same matter, and translated the relevant passages.

It is said, says 'Afif, that 'Aynu'l-Mulk was called 'Ayn-i-Māhrū. In the beginning of his rule, Firūz Shāh convened a council to concert measures for the administration of the empire consisting of the Prime Minister and the Minister of Finance. 'Aynu'l-Mulk (who was probably one, whom Firūz consulted) was wise, accomplished, of high attainments, superior in intellect, eminent in prudence and judgment. The author has reliably been informed that during the reign of Sultān Muḥammad ibn Tughluq Shāh, owing to his brothers' improper and unworthy conduct, 'Aynu'l-Mulk was privately disgraced. Later, Sultān Muḥammad held a general court and a *Zailucha* (a small woolen carpet) was placed in front of the throne. When all the dignitaries of religion—Qudāt, 'Ulamā, Mashāyikh; and statesmen—Khānān, Mulūk, M'ārif; as well as the public, high and low, who were summoned—attended the court, and stood in their proper places, His Majesty commanded that they should come forward. When they came up, the Sultān addressing them asked:—"I put to you a question, If a man has a precious *gem* and loses it; and after a while he accidentally sees the *gem* on a dung-hill, will he take it or not?" They replied: "Yea, he should take it up, it is not reasonable to leave it." When His Majesty heard this reply, he said, pointing towards 'Aynu'l-Mulk: "That *gem* is our Khwāja 'Aynu'l-Mulk. He had fallen among the dung-hill formed by his brothers; we have now recovered our *gem*." He ordered that 'Aynu'l-Mulk should take his seat on the *Zailucha*. In fact, 'Aynu'l-Mulk was a man of prudence and judgment, and had many excellent qualities. He has written several excellent books, during the reigns of Muḥammad Shāh and Firūz Shāh. One of them is the "*Tarassul-i-'Aynu'l-Mulki*" (the correspondence of 'Aynu'l-Mulk), which is known everywhere and to everyone.<sup>1</sup>

Thus Shams-i-Sirāj mentions the incident of 'Aynu'l-Mulk's pardon, with interesting details, left out in the earlier volume by Ziyā'ud-Dīn Baranī. Below Shams gives certain details of 'Aynu'l-Mulk's breach of friendship with the Prime Minister that took place in Sultān Firūz's reign, and of which the chronicler was fully cognisant.

When 'Aynu'l-Mulk was appointed to the office of Ashrafu'l-

<sup>1</sup> A copy of this book as noted at the beginning of this paper is in the library of the Asiatic Society of Bengal. I do not know if 'Aynu'l-Mulk's other works still exist.

Mamālik (Imperial Ashraf, an officer in charge of the Treasury whose duty was to authenticate amounts and writings) of the Empire of Dihli, he put forth his best efforts to the discharge of his duties of Ashraf, and took his seat in the Diwān-i-Wazārat (Ministers' Office). It is to be regretted that there arose constant dispute and bickering between him and the Minister, Khān-i-Jahān. Each side uttered allegorical expressions, till they carried them to extreme. One day His Majesty's minister told 'Aynu'l-Mulk: "What has the *Mushrif* to do with papers showing detailed expenditure, that he should call for such accounts from the fief-holders? The *Mushrif's* duty is to assess the *Jama* or collection, or to make valuation of the revenue. To cheque the disbursement is the exclusive prerogative of the Mustaufi (auditor of accounts)." 'Aynu'l-Mulk replied: "What has Mustaufi to do with the papers showing the detailed collection?" Both repaired to His Majesty's throne uttering threats. They requested His Majesty to specify the respective duties of the *Mushrif* and Mustaufi. His Majesty ruled that the fief-holders of aq't'a, and officers thereof should be instructed that they should render to the Diwān-i-Ashraf (*Mushrif's* office) detailed account of Jam'a or collection and an abstract of disbursement; and to the Diwān-i-Istifā (Mustaufi's office) detailed account of expenditure, and an abstract of collection; and in the Diwān-i-Wazārat (Minister's office), detailed account of both receipts and disbursements.

It may be stated, in order to understand what 'Afif says, that two high officials, both connected with the Finance of the Empire, were attached to the Diwān-i-Wazārat, or the office of the Prime Minister. One was entitled *Ashrafu'l-Mamālik*, and his office that of *Mushrif*; and the other *Mustaufi'u'l-Mamālik*, and his office that of *Maḥkama-i-Istifā*. The former dignitary used to authenticate, and the latter to audit, the accounts and writings. One used to check receipts and the other disbursements. The difference of opinion was as to whether these ministers should examine both receipts or assessments of revenue as well as disbursements. While Malik 'Aynu'l-Mulk, out of his zeal, wanted to look into both the accounts, Khān-i-Jahān, the Wazir, insisted that he as *Mushrif* should only confine his scrutiny to the receiptable side of the account, while the Mustaufi to the disbursement side. The decision of the far-sighted Firūz Shāh Sultān set the controversy at rest.

The differences of opinion, however, between Khān-i-Jahān and 'Aynu'l-Mulk continued as before. One day, when Firūz Shāh had gone out of Dihli on hunting, both Khān-i-Jahān Maqbūl, and the ostentatious 'Aynu'l-Mulk, were with his Majesty. The Sultān halted at a place. 'Aynu'l-Mulk, with a view to see His Majesty, rode out at mid-day, and arrived in

front of *Khān-i-Jahān's* quarters, got down from his horse, and entered the Minister's tents. The private attendants of *Khān-i-Jahān* informed the latter as to the arrival of 'Aynu'l-Mulk. Before he could come out and receive 'Aynu'l-Mulk, the latter was apprised by one of his attendants that these were the quarters of *Khān-i-Jahān*. 'Aynu'l-Mulk, became very warm with rage to his men, told them why he was not informed of it on his arrival, and left the Minister's place, without seeing him, and went to His Majesty's Camp. Having heard that 'Aynu'l-Mulk had left, and gone to the threshold of the Sultān, the minister too rode and went to His Majesty. He narrated to His Majesty how 'Aynu'l-Mulk came and left unceremoniously without waiting to see him. 'Aynu'l-Mulk was sent for, and His Majesty smilingly inquired: "Khawaja 'Aynu'd-Dīn, what was the reason of his going to the camp of *Khān-i-Jahān*, and then returning without seeing him? He ought to have seen him." Here 'Aynu'l-Mulk gave what was but a diplomatic answer. "I had not gone (really) to *Khān-i-Jahān's*, but intended to call at the threshold of the Imperial Camp. As there was hardly any difference between the Imperial pavilion and that of the Wazīr—the red pavilion, parlour, court, retiring apartment, of the Pādshāh, and of the Wazīr were indistinguishable, as also the elephants that were in front of the gate of His Majesty as well as of the Wazīr,—I could not see any difference in anything; so I mistook that special pavilion to be that of His Majesty; and thus it was how I alighted before *Khān-i-Jahān's* threshold." 'Aynu'l-Mulk gave a very ingenuous version of the occurrence. *Khān-i-Jahān* said to His Majesty: "I can no longer stay in this country; I intend going to the *K'aba* (Mecca). So long our dispute was confined to revenue matters; now 'Aynu'l-Mulk has disgraced me before your Majesty. It is now hard to get off with safety from this tempest. I should now arrange for my journey to the Kaba." His Majesty on hearing this retired to his private quarters, and became very dejected in mind.

Hereafter there continued acrimonious disputes between both the parties. The contention reached such a pitch that *Khān-i-Jahān* more than once, uttered bitter personal remarks against 'Aynu'l-Mulk in the latter's hearing, and 'Aynu'l-Mulk, too, retorted by uttering unpleasant expressions in the presence of the *Khān-i-Jahān*. There were no restraint or delicacy between them. One day both were in the Diwān and were busy disputing. The Wazīr at once addressing his opponent said: "Thou ill-behaved unclean-eater." His opponent too gave a severe reply. The Wazīr went to His Majesty. Firūz-Shāh seeing the Minister in an agitated state inquired: "All right *Khān-i-Jahān*, this is not the usual time of an audience." *Khān-i-Jahān*, at once, said that this 'Aynu'l-Mulk *harām khwār* (un-

clean-eater)<sup>1</sup> has uttered insulting words to me in the Diwān (office). If I be so insulted, who will have any regard for my person and for my office. Will your Majesty be so gracious as to confer the *masnad* of Wazārat to 'Aynu'l-Mulk.' His Majesty sat moodily for a time. Then addressing the Wazīr said: "Khān-i-Jahān, I have bestowed the office of Wazīr on you; all ranks of the Wazīr's Department are under you. Whomever you retain, he remains, and whomever you remove, he is dismissed. If 'Aynu'l-Mulk looks toward you with contumacy, have him removed from the office of Imperial Ashraf, and give it to another one." Khān-i-Jahān was given a royal robe, and he returned home well pleased. He thus sent the *Shahua* (trooper or superintendent)<sup>2</sup> of Wazīr's Department with orders to 'Aynu'l-Mulk that he was dismissed from the office of Ashraf-i-Mamālik. On the order being communicated, 'Aynu'l-Mulk did not go to the Imperial tent, for three days. After that he appeared to His Majesty, and salamed from the place of obeisance. His Majesty called 'Aynu'l-Mulk near, and impressed on him the bad effect of animosity: "As you and Khān-i-Jahān are not on good terms, I give you the *aql'a* (fief) of Multān, and the *aqtas* of Bhakkar and Siwastān; you should proceed to take up the appointment." When 'Aynu'l-Mulk heard this, he represented that he would accept the offer, provided he should not have to submit his accounts to the Wazīr's Department (Diwān-i-Wazārat), otherwise he would serve His Majesty at the head-quarters. His Majesty said: "Khwāja 'Aynu'd-Dīn, *aql'a* of Multān is separated from the Diwān-i-Wazārat. So any account submitted with your signature will suffice." 'Aynu'l-Mulk agreed to the condition.

When 'Aynu'l-Mulk was dismissed, the principal officers of State, as the author was informed, met in a solemn conclave, and came to the conclusion that what had occurred was not good. Today 'Aynu'l-Mulk was dismissed, through the influence of the minister, tomorrow the same minister might do the same to others. They turned the mind of the Sultān from Khān-i-Jahān, and contrived to disgrace him. His Majesty very prudently observed that if Khwāja 'Aynu'd-Dīn were present, he might have consulted him about the matter.

<sup>1</sup> The language spoken in and about Dihli was not pure Persian, but Hindi with the admixture of Turki and Persian, which is now called in our times *Rekhta*, or the language of Urdū (camp). The abusive word *haram khwar* (pronounced *haramkhur*) is still used. The language which Khusrāu, Hasan 'Aynu'l-Mulk, as well as the Sultāns of the Tughluq dynasty spoke was, I am sure, the same, which the people of Hindustān still speak. Of course, the provincial dialects, e.g. Maghadhī, Awadhī, etc., remain as before.

<sup>2</sup> Firūz Shāh appointed *Shahnas* (or Superintendents) over each Department or profession such as Sang-tarāsh (stone-cutter), Chōb-tarāsh (wood-cutter), āhingar (blacksmith), darūd-gar (carpenter), ārrahkash (sawyer), chūna-paz (lime-burner), rāj (mason)—p. 331. 'Afi.

'Aynu'l-Mulk had gone as far as Samaila—a distance of twenty-four Kos. His Majesty ordered that 'Aynu'l-Mulk should leave all his train and come to Dihli at once. The Sultān gave a private audience to 'Aynu'l-Mulk, when he arrived, and to all the detractors of the minister. They observed that to give the Wazir such power was not right, and it was well to beware of him. His Majesty turned towards 'Aynu'l-Mulk, who said that to think ill of the minister was to court disaster for government, because *Khān-i-Jahān* was a wise minister of exceptional abilities. It was not prudent to remove him as it would shake the ship of State. The Sultān, at the advice of 'Aynu'l-Mulk, summoned the minister to the same audience, and when he came, His Majesty spoke to him all that had taken place. The good minister was greatly perturbed at what he heard. No sooner did his Majesty perceive the agitation on the part of the minister, than he put his hands into those of the minister,<sup>1</sup> clothed him with his special robe, and took leave of him, with many marks of favour. The minister put 'Aynu'l-Mulk on his knee, and said: "I did not know that you loved me so much. I was on the wrong, that I treated a man of your good qualities such." 'Aynu'l-Mulk replied: "Our position remains as before. What I have said was for the stability and welfare of the Empire." In spite of *Khān-i-Jahān*'s entreaties, 'Aynu'l-Mulk did not go to his house. On learning of this, His Majesty exclaimed:—

"A wise enemy who aims at the life,  
Is better than the friend who is a fool."

The above episode told in 'Afif's most vociferous style, affords us a glimpse into the court intrigue of the time. 'Ayn-i-Mahrū was liked and loved not only by Sultān Muḥammad Tughluq but also by Sultān Firūz. In the present case, Firūz did not like 'Aynu'l-Mulk less, but that he liked *Khān-i-Jahān* more.<sup>2</sup> His Majesty could manage the affairs of his Empire without the one; but not without the other. His Sultānic Majesty's conciliatory and tactful handling of the most delicate problem, saved the situation. It was such prudent policy on

<sup>1</sup> i.e. he shook the minister by the hands—in the manner the Muslims do.

<sup>2</sup> *Khān-i-Jahān* was one of the favourites of the Rāi of Tilangāna. The Rāi dying on his way to Dihli, *Khān-i-Jahān* who was called Kunnu embraced Islām in the presence of Sultān Muḥammad Tughluq under the name of Maqbūl. In his letters and signatures he used to call himself "Maqbūl slave of Muḥammad Tughluq." Although he did not know to read and write, he was one of the wisest men. The Sultān gave him the title of *Qiyāmu'l-Mulk* and the fief of Multān. Later he became Naib-i-Wazir, managed all the affairs of the Prime Minister's office in the life time of *Khawāja-i-Jahān*. After him, *Qiyam-u'l-Mulk* Maqbūl became the Wazir of the State, under Firūz Shāh and received the title of *Khān-i-Jahān* in 753 H. (1352 A.D.)—*A/f*.

the part of the Emperor and such qualities of his ministers that made the reign of Sultān Firūz one of the most glorious and prosperous in the annals of India.

In addition to the authors of the *Tārikh-i-Firūz Shāhī*, Malik 'Aynu'l-Mulk has been mentioned by no less a person than the celebrated Amīr *Khusrau*<sup>1</sup> in two of his works, viz. *Tārikh-i-'Alā'ī* in prose, and *Ashīqa* or *Diwalrānī Khizr Khān*, in verse. The following extract from the former work is from Elliot-Dowson, Vol. III p. 76 :—

His (Sultān Alau'd-Dīn Khaljī's) confidential chamberlain, 'Ainul-Mulk, was appointed to the Government of Mālwa, and directed to expel Mahlak Deo from Māndū, "and to cleanse that old Gabristān from the odour of infidelity." A spy showed him a way secretly into the fort, and he advanced upon Mahlak Deo "before even his household gods were aware of it." The Rai was slain while attempting to fly. This event occurred on Thursday, the 5th of Jumada-l-awwal A.H. 705 (Nov. 1305 A.D.). 'Ainul-Mulk sent a chamberlain to the Sultān with a despatch announcing this event. The Sultān returned the thanks to God for the victory, and added Māndū to the Government of 'Ainul-Mulk.

In the *'Ashīqa* (Vol. III p. 550 *appendix* of Elliot-Dowson) *Khusrau* writes: This conquest (Mālwa) was effected by 'Ainul-Mulk, Māndū taken, "a wonderful fortress four *para-sangs* in circumference."

The following lines from *Khusrau's Ashīqa* (pp. 68-69, Aligarh Edition) are copied to show 'Aynu'l-Mulk's qualifications to use both pen and sword:

چوشه میخواست آنسو بی مدارا	که گردد نور اسلام آشکارا
بعین الملک شارت کرد ز ابروی	که آرد زود سوئی ممالوه روی
ز بینائی که عین الملک را بود	بدیده در پذیرفت آنچه فرمود
اگرچه این تیغ زن صاحب قلم بود	بخنجر نیز در لشکر علم بود
فرستاد آگهی در حضرت شاه	همان اقطاع دادندش ز درگاه

In order to shed without modesty, the light of Islam to that quarter, the Sultān ordered 'Aynu'l-Mulk to proceed at once to Mālwa. With the far-sightedness, which 'Aynu'l-Mulk (Eye of the Kingdom) had, he agreed, with his eyes, to what he was ordered. Though this wielder of sword was a penman (civilian, or writer), but his reputation in the army was also for swordsmanship. . . . . He sent the news (of the victory) to the king's throne, His Majesty bestowed on him the same *aqī'ā* (territory).

<sup>1</sup> Amīr *Khusrau* was born in 651 H. (1253 A.D.) and died in 725 H. (1325 A.D.).

Ibn Baṭūṭa, the celebrated Arab traveller, who was an eye-witness, gives a very interesting account of 'Aynu'l-Mulk's revolt. He was with the Sultān, when Aynu'l-Mulk with the aid of his brothers rose against Sultān Muḥammad Tughluq. The account is a long one, has been left out in the abridgment translated by Samuel Lee (1829) and almost skipped over by Elliot-Dowson. I will give only a brief account of what Ibn Baṭūṭa writes, from the original Arabic published by C. DeFrémery, Paris 1855.

Owing to dearth, the Sultān encamped on the Ganges, ten days' journey from Dihli. He ordered his men to build houses, as their grass sheds had greatly suffered from fire, when they used to put their valuables into pits dug in the earth. The traveller Ibn Baṭūṭa went at that time to live where the Sultān was. The country on the west of the river, where the Sultān lived, was suffering from dire famine; and that on the east was fertile. The Governor (Amir) of this side—consisting of Oudh, Zafarābād, Lucknow and other places—was 'Aynu'l-Mulk ibn Māhir (Mahru).<sup>1</sup> He used to supply daily fifty thousand *mans* of grains, consisting of wheat, rice and gram (*hamens*) for the fodder of the cattle. The Sultān ordered that the elephants and the greater number of horses and mules should be transferred to the fertile east, and asked 'Aynu'l-Mulk to take care of them. 'Aynu'l-Mulk had four brothers—Shahrullāh, Naṣrullāh, Faḍlullāh, and another one, whose name the traveller forgot.<sup>2</sup> They contrived with him to seize the elephants and beasts of burden, set 'Aynu'l-Mulk as Chief and revolt against the Sultān; and that 'Aynu'l-Mulk should fly and join them at night. The King of India had a custom to associate with every *āmīr*—great or small—a slave to watch him, and also a female slave to watch his female members; besides sweeper women, who would enter the house without permission. The female-slaves informed the sweeper women with what they knew. The latter again transmitted the same to the Chief of the intelligence, who informed the Sultān.... Ibn Malik Shāh, a slave, was set on 'Aynu'l-Mulk to watch him. He informed the Sultān about 'Aynu'l-Mulk's flight and his crossing over the river. The Sultān became very much apprehensive of his own safety, as the beasts of burden,

<sup>1</sup> From this it appears that 'Aynu'l-Mulk's father was called Māhrū or Māhir. (The latter is apparently a misprint.) But what to an Arab traveller appeared to be the name of 'Aynu'l-Mulk's father, might be his family name.

<sup>2</sup> According to 'Aynu'l-Mulk's letters his brothers as noted previously were named—Fakhrū'd-Dīn, Muazzamū'd-Dīn and Nizāmū'd-Dīn. None of these agree with the names given by Ibn Baṭūṭa, probably some of them were 'Aynu'l-Mulk's cousins. According to Ibn Baṭūṭa, his brothers, except one, fled with their family and valuables.

elephants, and the fertile fields, and everything, else were with 'Aynu'l-Mulk, and the Imperial forces were scattered. The Emperor, in the circumstance, wanted time to be ready, but his nobles, including Nāṣiru'd-Dīn Mutahhar'u'l-'Auhari, with whom all agreed, said in his words, "O Lord of the World do act promptly, and do not give further opportunity to the rebel."

The Sultān acted according to their advice. On the very night letters were despatched to all the army heads and soldiers that were near, who arrived without delay and the following stratagem was devised: If one hundred horse, for example, arrived at the head quarters, the Sultān sent thousands of them during night to meet them, and they then entered the camp all together, as if the whole lot of them were new reinforcements. The Sultān moved to the bank of the river, keeping Kanauj on the rear, which was at a distance of three days, and entrenched himself there. The Sultān's troops stood in battle array, in one line, with arms in front, and horse by the side of each man. Each had a case (knapsack), out of which to eat and wash, and then return to his place. The bigger quarters were at a distance from them. For three days the Sultān did not enter his tent or repair to a shady place. No women were allowed to remain with anyone, those that were there, were removed to a fortified spot, called Sambal. There remained no women, even with the Sultān. On the second day, the forces were arranged in battalions (*fauj*). With every battalion were elephants, wearing armour with towers on them.

Information was brought on the third day, which was later confirmed, that 'Aynu'l-Mulk had crossed the river.<sup>1</sup> The Sultān was greatly alarmed. Horses were distributed to selected men, and Kanauj was reached. The author was with the Sultān's cousin, Malik Firūz. Watch-words were given—those who responded as *Ghazna*, in reply to *Dihli* were friends, or else were directed to be fought with. The rebels had fifty thousand soldiers. With His Majesty's Minister, Khwāja-i-Jahān, were Persian, Turki, and Khurāsānian forces. Malik Ibrāhīm Banji of Tatary, whom the Sultān had given the fief of Sandila, under the governorship of 'Aynu'l Mulk, was one of the rebels, and was with the latter. 'Aynu'l-Mulk asked Ibrāhīm how to save himself, as most of the force had deserted. Ibrāhīm said to his comrades in their language,<sup>2</sup> that if 'Aynu'l-Mulk should flee, he would seize him by his 'stickers' and asked them to strike the horse, that he may fall on the ground,

<sup>1</sup> That is, recrossed the Ganges and arrived on the side, where the Sultān was encamped.

<sup>2</sup> Probably the Tartary language, which 'Aynu'l-Mulk, did not understand.

and secure him, which would be the means of saving his own life for the sin of his going against the Sultān. When 'Aynu'l-Mulk determined to flee, Ibrāhīm Tatary, addressing him said : " Whereto O Sultān 'Alāu'd-Dīn " for that was the title which he had assumed. Ibrāhīm's men struck his horse, and 'Aynu'l-Mulk fell on the ground. Ibrāhīm threw himself on him and secured him. The men of the Wazīr rushed up, but Ibrāhīm dissuaded them as either he would bring him up to the Wazīr, or he would perish. 'Aynu'l-Mulk was secured and made over to the minister. The Sultān came there ; and Ibu Batūta went to where 'Aynu'l-Mulk was, on the bank of the river. The forces of the rebel were either drowned in the Ganges, or plundered in their escape.

The Wazīr conducted 'Aynu'l-Mulk to His Majesty. The rebel was mounted on a bull, and save a scrap of stuff tied by a string round his waist, was naked. He was insulted and spat at his face by the nobility who buffeted his companions. The Sultān asked 'Aynu'l-Mulk as to the reason of his conduct, but he kept quiet. By order of the Emperor, the prisoner was dressed in the clothes of the conductors of pack-horses, and that he should have four chains put upon his legs, that his hands should be fastened to his neck. He was made over to the Wazīr, Khwaja-i-Jahān for safe custody. His Majesty at the recommendation of the Wazīr pardoned Ibrāhīm Banjī. After sunset sixty-two of the principal rebels were conducted to the presence of the Sultān. They were thrown under the feet of the elephants, and were killed, in the presence of 'Aynu'l-Mulk. The Sultān after a day's halt went to Bahraich on the river Surju. 'Aynu'l-Mulk's brothers crossed the river, while fighting. Arrived in Oudh, they took their family and children, and such of the valuables that they could carry with them. They said to the wife of their brother, 'Aynu'l-Mulk : " Save yourself and your sons, and come with us." She replied : " As the Hindu wives burn themselves with their husband, I will also die with the death of my husband : and be happy with his happiness," so they left her behind. This conversation greatly moved the Sultān, and was the cause of their welfare. The Sultān killed Nasrullāh. 'Aynu'l-Mulk's mother, sister and wife were made over to the Wazīr. Their tent was close to 'Aynu'l-Mulk's, whom he was permitted to visit, and then return to his prison. The Sultān pardoned the common people, who were with 'Aynu'l Mulk.

The Sultān returned to Dihli after an absence of two and half years and pardoned 'Aynu'l-Mulk.

I could find nowhere when 'Aynu'l-Mulk was born or died. He is first mentioned among the chief officers of Sultān 'Alāu'd-Dīn Khaljī, who commenced to reign in 695 H. (1295 A.D.). 'Aynu'l-Mulk was present at the seige of Ranthanbhor, and secured the victory of Mālwa (in 1305) of which he was

made Governor. In the opinion of no less a person than poet Amīr Khusrau, he had established his reputation both as a writer and soldier. What was his age in 1305? He could not be less than twenty-five. In a letter, traced among his correspondence, 'Aynu'l-Mulk was living in 763 H. (1362 A.D.), when his age must be 82 years if not more. I will finish this *Part* by the following story from the *Fatuhāt-i-Firūz Shāhi* written by Firūz Shāh himself (Elliot-Dowson, III, pp. 379-80): A person who was one of the *Mulā-Zādas* (sons of servants) of 'Aynu'l-Mulk, had set himself up as a *Shaykh* in the country of Gujrat. He used to say 'Anā'l-haqq (I am God or Truth). His disciples were required to say. "Thou art, thou art." He was punished by Firūz and his book was burnt.<sup>1</sup>

## PART II.

### *A brief notice of Māhrū's letters.*

The "Tarassul-i-'Aynu'l-Mulkī" or 'Ayn-i-Māhrū's *Inshā* or epistles were collected during the reign of Sultān Firūz, by the writer himself at the desire of his friends and admirers. In the Introduction—a portion of which is missing from the Asiatic Society's MS.—the author says that when by the help of the feeble heart he used to pen letters and epistles to friends and neighbours regarding wishes, controversies, and various other subjects, which all used to like, he was prevailed upon to collect them at their entreaties. The collection consists of *Manshūrs*,<sup>2</sup> *Miṣāls*,<sup>3</sup> *Nishāns*,<sup>4</sup> *Arzadshts*, and *Maktūbs*. *Manshurs*, *miṣāls* and *nishāns* are official documents, drafted by 'Aynu'l-Mulk for the Emperor or his Government. *Arzadshts* were either written by himself or on behalf of others. Similarly *Maktūbs* or letters on multifarious subjects were written by Māhrū on behalf of himself or others to various eminent persons or to family members.

I will only notice a few, and give a list of more important letters, noting the head-lines only. The documents which afford us a glimpse into Firūz Sultān's expeditions to Lakhnaūti and Jājnagar will be noticed in the concluding *Part*.

1. The first *Manshūr* was addressed to Majlis-i-'Āli Khān-i-A'azam Khāqān-i-Mu'azzam A'azam Humāyūn Rāth Khān, conferring on him the country of Sind (appointing him to the Governorship of Sind). The following are the head-lines of the *Manshūr*:—

<sup>1</sup> *Mulā-Zāda* (ملا زادہ) has been wrongly translated as a *pupil* for son of a servant. It is an abbreviation of *Mulāzīm Zāda* (ملازم زادہ).

<sup>2</sup> *Manshūr*, a royal mandate, diploma, patent or privilege not sealed or stamped with the royal signet.

<sup>3</sup> *Miṣāl*, a command, order.

<sup>4</sup> *Nishān*, a sign, flag, standard, the letter of a prince.

این منشور بجهت تفویض اقلیم سند بر مجلس عالی خان اعظم و خاقان معظم اعظم همیون فتحخان لازال عالیاً و علی الکرام والیامادر شد - الله اعلی  
 A'azam Fath Khān was a royal prince, son of Emperor Firūz Sultān. He was six years old, when Barani wrote his Tārīkh (758 H.)

2. The second *Manshūr* was also addressed to the same royal prince—A'azam Humayūn Fath Khān—appointing him Minister.

3. This *Manshūr* is addressed to Malik 'Aynu'l-Mulk (the author) appointing, and maintaining, him to the office of fief-holder of Multān. In this letter-patent the full title of Aynu'l-Mulk, as noted in the Introduction, is given.

4. This *Manshūr* purports to maintain, as before, the monastery (Khānqāh), with well, etc. in Gujrāt upon Sayyad Muḥammad M'ajūnī, of which he was dispossessed during revolutions. This Royal mandate is based on the decision arrived at by Malik'ush-Sharq wa'l-Wazacā Itikharu'l-Muluk Jāmi'u's-Saif-i-Wa'l-qalam Sāhib-i-Diwān-i Istifa-i-Mamālik Farīdu'd-Daula Wa'd-Dīn I'inī (that is) Husayn Āmīr-i-Mīrān (that is to say) Farīdu'd-Daula Mustafiū'l-Mamālik, Minister in charge of the portfolio of Istifa).

5. By this *Manshūr* is maintained the Khānqāh, village, land and wells of Shaykh Abū Bakr ibn Shaykh Shihābu'd-Dīn, better known as Shaykhzāda-i-Yazdi. This Khānqāh, called Kuriya (?) and Takziya (?) with tenements and wells, situated in *Nahrwala*, belonged to the late Hājji Rajab for *Wajh-i-M'āsh* or maintenance allowance, and other expenses. It is issued in accordance with the decision of the aforesaid authority (in charge of the Department of Istifa). The officers of Gujrāt are enjoined to follow the directions contained in His Excellency's letter in maintaining the same on the above Shaykhzāda.

6. A *manshūr* for the office of Dād-Begī (دادبگی) or Judge of the province of Multān. In it is mentioned that certain villagers of Multān marry others' wives before they are divorced. This practice,—vile and unauthorized, and not sanctioned by any school of theologians—is prevalent among them. They are fit for punishment and severe chastisement. As marriage is a divine institution for the purity of the person and propagation of progeny, etc., it is not proper to keep women at home undivorced. He should see that they are divorced before they are given in re-marriage, so that the children that may be born be legitimate, and their soul may be saved from the hell-fire. The Dād-Begī was ordered to warn the people and allow a month's time, after that they should be punished.

7. 'Ayn-i-Māhrū was instructed to rectify the accounts and to reclaim the villages, lands, milk and waqf properties of Multān, according to the direction issued by the Office of the

Minister. In a *arzadāsh*t or petition, 'Aynu'l-Mulk reports the state of the *waqf* thus:—The *waqf* of Sultān Mu'izzu'd-Dīn Muḥammad Sām, of two villages for the expenses of the Jām'i mosque of Multān, five tuitions (lectures) by professors, repeaters (*mukarraran*), pupils, and of the officers (*ārbāb*) of the mosque, *i.e.*, muazzins, mukabbirs (those who call for *azān* and *tokbīr*), also for other necessities, as carpets, mattresses, lights, repair of the mosque. These charities are intimately connected with religion. These duties are being performed under the direction of the *Shaykh*u'l-Islām, under whose superintendence the charities are placed. At one time extraordinary expenses were ordered to be defrayed from the State revenue, afterwards from the profit of the two villages, which is reserved for the repair of the mosque. The *waqf* of *Khān-i-Shahid* (*i.e.* Prince Maḥmūd, son of Balban) is also of two villages, intended for a seminary as well as for the board of professors, mukabbirs, and students. There may be doubt about the legality of this *waqf*; but the dependants on this *waqf* are poor, and fit for relief from the Bayt'ul-Māl. It is said there is the *waqf* of a village in connection with the *Masjid-i-Jām'i Talbina* (?) made by Sultān Muḥammad Sām. Their expenses are: Sultān Shahīd's *waqf* is a plot of land within *Khitta-i-Multān*, on the *namāz-gāh* (prayer-ground) of Multān (Here gives details of expenses about the mosque, muazzin, imām, repair of *namāz-gāh*). There is doubt as to the legality of the *waqf* of State property. There is no such doubt about the Milk property.

The wise and holy persons, who have been offering prayers for His Majesty are poor. They recited the *Qur-ān*, while His Majesty was engaged in *Jājnagar*. If such part of the *waqf* that appertains to State property (*diwāni*), be set apart as *ṣadqa* or alms, then these men are deserving of it. The total income of the *waqf* is not great. Multān has been under Islām for seven hundred years. The people of Multān emigrated from their homes owing to various vicissitudes, and Multān's prosperity had departed. It is only during His Majesty's reign that the town has shown signs of revival and people are returning to enjoy old pious endowments.

The writer apologises for his special pleadings for the Multānīs, and asks permission that *Maliku'sh-Sharq Wa'l-Wazarā*, 'Aynu'l-Mulk (the writer himself) may maintain the *waqf* as before.

This petition to the throne or to the Ministry shows 'Aynu'l-Mulk's love for, and partiality to, Multān, which was his home. The petition is dated in 763 H. (1362 A.D.), after the *Jājnagar* expedition.

8. This letter was written to *Shaykh-i-Shuyūkh*u'l-Islām *Sadrul Haq* Muḥammad for the members of the late Malik *Qutbu'd-Din Dabīr's* family, who was the elder brother of this younger one (the person on whose behalf 'Aynu'l-Mulk wrote).

He was a respectable man, whose family are now in distress, after his death. The deceased was in receipt of 150 silver (نقعة) *tankas*<sup>1</sup> and two meals from the monastery of *Shaykh-i-Shuyukhil Islām*, *Nizāmu'd-Dīn*—which may be continued by *Shaykh Hasan* and *Shaykh-zāda Hārūn*.

9. Letter addressed to *Maliku'l-Mashaykh Qudwatu'l-Auliya Raziu'd-Dīn*. Maulana Hajji Beharī severely deals with Muslims of *Uchh* at the time of evening prayer, beating and abusing them, and sometime sending them to dungeon, when they come to him for any business. He imposes fines, from one to two thousand *tankas* or more on them. The advice of 'Ulamā and *Mashaykh* had little effect.<sup>2</sup>

The letter contains a few lines to the *fief-holder* of *Uchh*, *Khwāja Kamālu'd-Dīn*.

10. In another letter to the same *Maliku'l-Mashaykh Raziu'd-Dīn*, 'Ayn-i-Māhrū, tries to exonerate himself from the charge of interference, for which he was accused, with the decisions of that high divine. When the Imān, in the weekly Friday prayer says سَمِعَ اللَّهُ لِمَنْ حَمِدَهُ (may God accept the praise of him who praiseth Him) the *Muqtadis* (followers or congregation) should say سَمِعَ اللَّهُ لِمَنْ حَمِدَهُ (O God! praise is due to Thee). The word سَمِعَ was an innovation introduced by the *Shaykh Raziu'd-Dīn*.

11. There are other letters to the same authority, in one of which complaint is made against certain innovations introduced by *Badru'd-Dīn Qīmaz* and *Kamāl-Tāj*, two new arrivals from Multān.

12. In a letter 'Aynu'l-Mulk asks the book "Maqāmat of Maulānā *Sharafu'd-Dīn Tuwāmān*" from Sayyad *Nāsiu'd-Dīn*. He acknowledges its receipt in another letter.

This incorrectly and perfunctorily transcribed manuscript, full of omissions and inaccuracies, especially in the names of persons and places—can yet be very profitably used for the history and times of the Turkish Sultāns of India—Muḥammad Shāh, and Firūz Shāh Tughluq. A list of certain letters and despatches of general interest is subjoined. I have left out other family and private correspondences.

<sup>1</sup> Was the *silver tanka* the same, as the *taka*, or rupee, of Bengal? In upper India a copper coin, equivalent to two pice is called a *taka*, but in Bengal a silver rupee, equivalent to sixteen annas, is still called a *taka*.

<sup>2</sup> In Khwarizm 'When anyone absents himself from his place in the mosque, he is beaten by the priest in the presence of the Congregation, and, moreover, fined in five dinars, which go towards repairing the mosque. In every mosque, therefore, a whip is hung for this purpose.' — *Ibn Batuta's travels* by Rev. Samuel Lee, B. D., p. 86.

1. این منشور بجهت تفویض اقلیم سند بر مجلس عالی خان اعظم و خاقان معظم اعظم همیون فتحنخان لازال عالیا و علی الکرام والیا صادر شد - الله اعلى و حمده اولى \*
2. این منشور برای تفویض شغل وزارت از حضرت خدایگان بجانب مسند عالی اعظم همیون صادر شد \*
3. این منشور بجهت تفویض ثبات اقطاع ملتان که بجانب بندۀ درگاه علمی صادر شده در قلم آمد \*
4. این منشور برای تقرر داشت سید السادة منبع العبادۀ سید محمد معجونی در قلم آمد \*
5. این منشور بجهت تفویض خانقاه شیخزاده ابوبکر یزدی در قلم آمد \*
6. این مثال بجانب ایمه و سادات و مشایخ و خانان و ملوک و کائۀ رعایا و عامۀ برایا ملک لکهنوتی در قلم آمد \*
7. این منشور بجهت شغل داد بگی خطۀ ملتان در قلم آمد \*
8. این مثال یکی از امرا بجهت سر لشکری اقلیم سند در قلم آمد \*
9. این مثال بجهت تفویض ثبات اقطاع عالم آباد یکی از امرا در قلم آمد \*
10. این مثال بجهت بمیل کر (?) لکهن رای مقدم تولاده در قلم آمد
11. این عهد نامه برای ملوک گلا و امراء نامدار و مخلصان درگاه و خوانین بارگاه در قلم آمد \*
12. این عرضه داشت در جواب فتحنامه جاجنگر بجانب بندۀ درگاه اعلى صادر (?) بود در قلم آمد \*
13. این مکتوب بجانب شیخ شیوخ عالم صدر الحق و الدین محمد اسمعیل دامت برکاته در انچه شیخ الاسلام ممالک بدو مفوض شده بود در قلم آمد \*

14. این عرصه داشت که در بارهٔ تقرر اوقاف عرصهٔ ملتان بحضورت اعلیٰ رفع شده بروقف التماس امداد یافته در قلم آمد \*
15. این مکتوب نیز بجانب شیخ شیوخ الاسلام صدر الحق محمد (?) ادام الله برکاته در باب اعلحضرت اولاد ملک قطب الدین مرحوم که او مردی محترم بود بعد وفات اولاد او در تنگنای فقر و فزاده در قلم آمد \*
16. این مکتوب بجانب وافر کرامت ملک المشایخ قدوة الاولیا اضعف والنهاد (?) و الاتقیاء رضی الحق و الشرع و الدین دامت برکاته بقلم آمد \*
17. این مکتوب نیز بجانب ملک المشایخ و الاولیا رضی الحق و الدین دامت برکاته در قلم آمد \*
18. این مکتوب (بجانب) ملک المشایخ رضی الحق و الدین ادام الله میا من انفسهم المتبرکه در قلم آمد \*
19. این مکتوب نیز بجانب ملک المشایخ رضی الحق و الدین دامت برکاته بقلم آمد \*
20. این مکتوب بجانب سید السادات منبع الجود و الکرامات جلال الحق و الشرع و الدین احمد بخاری مد الله اعلامه در قلم آمد \*
21. این مکتوب (?) شیخ حسن سر برهنه در استسقا (?) حسن خدمت اعانت همشیره و اتباع ملک قطب مرحوم در قلم آمد \*
22. این مکتوب بجانب قاضی منهاج الدولت و الدین عبد الله مقتدر در قلم آمد \*
23. این مکتوب بجانب صدور جهان جلال الحق و الدین متضمن اجوبه و تمهید معذرت در قلم آمد \*
24. این مکتوب بجانب سید القضاة و الحکام معزز الدوله و الدین حاکم قصبهٔ اچه در قلم آمد \*
25. این مکتوب بجانب قاضی رکن الدین سر دفتر دار در قلم آمد \*
26. این مکتوب بجانب قضاة تهنیس در قلم آمد \*

27. این مکتوب بجانب مولانا شمس الدین متوکل مشتمل بر ترتیب (?) بیست و چهار عین هر یکی بمعنی دیگر در قلم آمد \*
28. این مکتوب نیز بجانب مولانا شمس الملة و الدین متوکل متضمن روایات فقه در قلم آمد
29. این مکتوب بجانب مولانا شهاب الملة و الدین مهمی متضمن اسراف در قلم آمد \*
30. این مکتوب بجانب مولانا شهاب الملة و الدین مهمی دام تقواله در قلم آمد \*
31. این مکتوب بجانب خداوند سید العلماء رفیع الدولة و الدین متصرف مطبخ خاص در قلم آمد \*
32. این مکتوب بجانب سید السادة شمس الحق و الدین یحیی گردیزی متضمن مطایبه در قلم آمد \*
33. این مکتوب بجانب سید السادات امر الملة و الدین سید قطب الدین مرحوم ناظر دولت در سرای در قلم آمد \*
34. این مکتوب بجانب ملک الامرا و السادات ناصر الحق و الدین مقطع لاهور از برای طلب نسخه مقامات (مولانا استاد العلم شرف الدین قوامان علیه الرحمة) در قلم آمد \*
35. این مکتوب نیز بجانب سید السادات ناصر الحق و الدین بعد رسیدن نسخه مقامات در قلم آمد \*
36. این مکتوب نیز بجانب سید السادات منبع السادات ناصر الحق و الدین در صنعت دوم رعایت کرده شد \*
37. این مکتوب بجانب مجلس عالی خان کبیر و خاتان کشور کبیر اعظم ظفر خان دام علیاً در قلم آمد \*
38. این مکتوب بجانب خان اعظم ظفر خان متضمن معذرت در قلم آمد \*

39. این مکتوب نیز بجانب خان اعظم ظفر خان دام عالیا در قلم آمد  
(فرمان تغلق شاهي) \*
40. این مکتوب بجانب ملک ملوک الشوق و الوزراء افتخار الملک  
41. }  
to }  
45 } (5 more letters to the same)
46. این مکتوب بجانب (sic) ملوک الشوق داور الملک اعز الله نصرهم  
در قلم آمد \*
47. }  
48. } (یعنی ملک ملوک الشوق شمس الدوله و الدین محمود بک دام  
(2 more letters to the same) \*)
49. }  
50. } این مکتوب بجانب ملک الامرا معروف سید الحجاب در قلم آمد  
(Another letter to him) \*
51. این مکتوب بجانب ملک الامرا بهمان الدوله و الدین اخص  
الخوایس الغ قتلغ خاصعاجب در قلم آمد \*
52. }  
53. } ملک الامرا عمدة الملک اعز الدوله حاجي دبیر در قلم آمد \*  
Another letter to the same.
54. }  
55. } این مکتوب بجانب ملک الامرا انوار الدوله و الدین حاکم خطه  
(Another letter to the same) \*
56. این مکتوب بجانب ملک الشوق و الوزراء قاج الدوله و الدین در  
قلم آمد \*
57. این مکتوب بجانب ملک الامرا حاجب دیوان نظر ممالک در قلم  
آمد (بملک کمال الدین حاجي جاجرمي در قلم آمد \*)

### PART III.

*Some corroborative or additional accounts of Firūz Shāh's expeditions to Lakhnaūt and Jāznagar.*

I found in Malik 'Aynu'l-Malk's "Tarassul" or correspondence a few very interesting and historically highly important documents. The first is a *Nishān* (literally a sign, a flag) or

Proclamation addressed to the Ā'imma, Sādāt, Mashayikh, Khāns, Maliks, and to all the R'ayyats and the general public of the country of Lakhnauti.

Before I give an abstract, I may mention that Emperor Firūz Shāh Sultān invaded Bengal twice, viz. in 754-5 H. (1353-4 A.D.), and again in 760-62 H. (1350 A.D.). In the first expedition, narrated both by Minhāj and Shams-i-Sirāj, Sultān Firūz (who was absent from Dihli, for eleven months) had to fight with the Zābit of Lakhnauti, Ilyās Hājji, who had assumed the royal title of Shamsu'd-Din. As Ilyās was addicted to *bhang* or Indian hemp, he was vulgarly nicknamed *Bhangra*. In this and other expeditions, the peace-loving Emperor won the heart of the people and apparently his object, by his generous policy, and not by coming in deadly conflict with his enemies.

This Proclamation (*nishān*), which is found among 'Aynu'l-Mulk's correspondence runs thus:—

“Whereas it has come to Our auspicious ear that Ilyās Hājji has been committing oppression and high-handedness upon the people of the territory of Lakhnauti and Tirhut, shedding unnecessary blood, even shedding the blood of women, although it is a well established proposition in every creed and doctrine that no women even if she be a kāfir, should be slain: And (whereas the said Ilyās Hājji) has been levying illegal cesses not sanctioned by the law of Islam, and thus putting the people into trouble; there being no security of life and property, no safety for honour, and chastity: And whereas the territory was conquered by our Masters and has come down to us by inheritance, and also as a gift of the Imām ('Abbasid Khalifa of Egypt') it devolves upon our Royal and Courageous selves to safeguard the people of that State. And as Ilyās Hājji during the lifetime of his late Majesty was obedient, and loyal to the throne; and even during our auspicious Coronation he confessed his submission and fealty, as becomes a subordinate, sending petitions and waiters to attend upon Us; so if, heretofore, it were brought to our august notice an infinitesimal part of the oppression and high-handedness that he had been committing on God's creatures, we might have admonished him, so that he might have desisted therefrom: And whereas he has exceeded the limit, and publicly rebelled against Our authority, therefore we have approached with an

<sup>1</sup> In Zil-Hijja 756 H. (1355 A.D.) a robe of honour and a diploma arrived from Khalifa Al-Hākim bi Amrill-lāh Abi'l-Fath of Egypt conferring on the Sultān the territories of Hindustān-Tārikh-i-Mubārak Shāhi. Elliot-Dowson, IV, p. 9. Firūz Shāh's Proclamation is dated before he received the diploma from the Fatimid Khalifa, so his claim was presumably based on his inheriting the right from his predecessor.

invincible army for the purpose of opening this territory, and for the happiness of the people thereof; desiring thereby, to deliver all from his tyranny, to convert the wounds of his oppressions by the salves of Justice and mercy, and that the tree of their existence, withered by the hot pestilential wind of tyranny and oppression, might flourish and fructify by the limpid water of our bounty.

We have therefore by the exuberance of our mercy commanded that all the people of the territory of Lakhnauti—the Sādāt, ‘Ulamā, Mashaykh, and others of similar nature; and also the Khāns, Maliks, Umarā, Šadrs, Ākāber, and M’aārif, including their train and suite,—those who may prove their sincerity or those whose zeal for Islām may prompt them thereto, may resort to our world-protecting presence, without waiting and delay, We shall give them more than they received from their fiefs, villages, lands, stipends, wages, and salaries: And the class of people, called Zamīndārs, as Muqaddams,<sup>1</sup>

مقدامان، (؟) and such like, from the river Kasai (Cossye) to the farther limit of the Velāyat of Lakhnauti, that may (similarly) come to our world protecting presence, We shall remit wholly the produce and duties (revenue in cash and kind) for the current year; and from the next year, We have directed to levy the revenue and duties, in accordance with the Regulation promulgated during the reign of the late Sultān Shamsu’d-Dīn<sup>2</sup> but in no case more than that should be demanded, and the extra or illegal taxes and duties, which may weigh unduly heavily upon the people of that part of the country, should entirely be remitted and removed. And such of the hermits, Sāfīs, and gabrs (? Zoroasterians), etc. who may come in a body to Our world-protecting presence, We shall allow them wholly what they used to receive from their fiefs, villages, lands, wages and stipends, etc., and those who may come in their half number, (that is in two batches on different dates,) We shall allow them one bekna (?) and anyone who may come singly, we shall allow him what he had before. Furthermore, We shall not remove them from their original places or give them cause for distress; that We have commanded that one and all of this tract may live and dwell in their homes and hearths, according to his and their hearts’ desire, and may enjoy evermore contentment and freedom from anxieties. *Inshā’al-lāh t’aālā* (if God Almighty may wish).”

The above Proclamation is new and has not been published, since its issue at the end of 754 (1353 A.D.). The

<sup>1</sup> Muqaddam is a superior officer of the revenue in a village.

<sup>2</sup> Sultān Shamsu’d-Dīn, son of Sultān Nāsiru’d-Dīn son of Sultān Ghayāthu’d-Dīn Balban, king of Lakhnauti—Elliot-Dowson, III, p. 609. Shamsu’d-Dīn Firūz, King of Bengal from 701–722 H., *Vide* Stapleton’s “Contributions” J.A.S.B. for 1922, Vol. XVIII, p. 411, etc.

main grounds of the expedition to Lakhnauti and Pandua, enunciated therein, and the tyranny, and atrocities ascribed to Ilyās Hājji, are clearly noted by Maulānā Ziyāu'd-Dīn of Baran. The proclamation corroborates the historian's account, with certain additional facts not mentioned by him. In this *misāl*, Sultān Firūz addresses three classes of men of the country: *first*, the religious group, *secondly*, the officials, civil and military, *thirdly*, the landed proprietors and masses. The former two were no doubt Muslims, the last class were the natives of the soil. The Hindū Sāins and Zoroasterians have however, been specifically mentioned.

Lest the dignitaries of religions and State may think that one Muslim sovereign is fighting illegally with another, Sultān Firūz, therefore, clearly justifies his expedition against the *Pilgrim* Ilyās. The chief grounds of the expedition were that the *Zābit* of Lakhnauti was a subordinate to the Emperor, and as such, he had no business to rebel against the authority and prerogative of his liege lord; that Ilyās was guilty of atrocities not only to men but also to women of Lakhnauti and Tihūt or as we now say of Bengal and Behar, and had tyrannically exacted illegal duties and taxes from the people, and there was no security for life and property in the country. It was therefore, the obvious duty of the Central Government to save the people from Ilyās Hājji's tyranny, high-handedness and exactions, and to punish him severely. The Sultān not only based his claims on inheritance from the previous Emperors, but to the special prerogative he and they enjoyed from the Imām, the *Khalif*, as the rightful rulers and vice-regents in India, whose order every one was bound to obey. The concessions His Majesty promised to the oppressed people of Lakhnauti are, to us, new, and interesting. The *Misāl* throws many intimate glimpses into the Indo-Turkish rule of seven centuries since.

I found difficulty in deciphering the document, as it is full of errors on the part of the ignorant scribe. I hope I have given an intelligible abstract of this important notification. It may with advantage be compared with some of the proclamations of our times issued by a different race and in a different tongue—both aliens to India.

The second expedition to Lakhnauti<sup>1</sup> and later to Jājnagar is mentioned only by Shams-i-Sirāf 'Afif, and was begun by Emperor Firūz Sultān in 760 H. (1359 A.D.). Some very important side-light is thrown by Māhrū on Sultān Firūz's expedition against the Rāi of Jājnagar, in Orissa, which supplements the interesting details given in Shams-i-Sirāf's graphic account (pp. 163-174 *Tarikh-i-Firūz Shāhi*, Bibliotheca Indica Series).

<sup>1</sup> In the course of a letter, Māhrū refers to Firūz Shāh's victory at Lakhnauti over Sikandar Shāh, son of Hājji Ilyās.

Māhrū gives these particulars in the course of a draft *'Ahd-nāma*, or agreement, and an *'arṣa-dāshl* or petition, submitted by him to His Majesty.

The second expedition to Lakhnauti was chiefly due to Sultān's not taking the full advantage of his previous victory over Ilyās. Malik Fakhrū'd-Dīn, nicknamed Fakhra, proclaimed himself Sultān at Sonārgāon. Shamsu'd-Dīn Hājji Ilyās slew Fakhrū'd-Dīn, and became master of Sonārgāon as well as of Lakhnauti (both Western and Eastern Bengal). Hearing this, Khān-i-A'āzam, Zafar Khān, son-in-law of Fakhrū'd-Dīn went to Firūz Shāh, and asked his help. When Sultān Firūz marched for Bengal the second time, Sikandar Shāh, son of Ilyās Hājji had succeeded to the throne. Sultān Sikandar having, eventually, acknowledged Firūz Sultān as liege-lord, the latter left Bengal, and spent the rainy season at Jaunpūr. Firūz returned back, through Behār, and invaded Jājnagar at the end of 761 H. (1360-1 A.D.).

The *'Ahdnāma* which is but an instrument of Affidavit, purports to have been agreed to, and executed, by the Maliks of the Court, great Amīrs and sincere well-wishers from among the Imperial suite, also Khāns of the Council of His Majesty, (those officials—Civil and Military—who accompanied Firūz Shāh to Jājnagar) swearing fealty and affirming loyalty to the Emperor. It begins thus:—With sincere desire and firm conviction, I say, by the God of the universe, Lord of the heaven and earth.....

It ends thus:—I have at this time and moment sworn and emphasised with an oath, to go against which is infidelity, that in the obedience, loyalty, sincerity, good wishes of the master of the world, Vice-regent of the Amīrū'l-Muminīn (Commander of the Faithful), Khālifa of the Nourisher of the Universe (God), Sultān i-Salātīn al-Wāsiq-ba-tā'id'il-lāh'ir Raḥmān, Abu'l-Muzaḥḥar Firūz Shāh Sultān, may God perpetuate his kingdom and Sultānat and may He elevate his commands and his splendour

(نائب امير المؤمنين خليفة رب العالمين سلطان سلاطين الوثائق بتأييد الله الرحمن ابوالمظفر فيروز شاه سلطان خلد الله ملكه و سلطانه و اعلى امرة و شانه)

who alone, according to Islamic law and consent of the Imām (Head of the Islamic Church, that is the Khālifa) has absolute right to be obeyed, and whose loyalty and obedience upon all are incumbent, proved and absolute, I shall be steadfast and sincere, and I shall be the friend of his friends, and the enemy of his enemies throughout my life, and I shall never go against His Majesty's train, suite, surroundings and sincere well-wishers. (One sentence shows that the Qāḍi appointed was of Shafi'i school.)

The following are from the intermediate part of the docu-

ment:—When the heavenly banners of His Majesty put its shadow towards the environs of Banarasi and Sarang-garh, the Rāi did not well understand (the situation) as the day was unlucky, and did not see his way otherwise than in flight. Prior to his flight, he sent for Ahmad Khān and Bāki Patar (?) and handed to them in recognition of their services to him, elephants, riches, presents and turuq (?) (care or expenses of road or passes is probably meant). He had sent already to a strong place select elephants. When Ahmad Khān and Bāki Patar heard the din of kettle-drum, pipe and military flute, they lost the balance of their feet and became demoralized. They dragged their legs and saved their lives. They saw that there was no getting out but in their submission. Owing to the terror and fear, which His Majesty's invincible forces produced, they rushed headlong, dragging along the elephants with them, which they left at the battle of Sarang-garh. The Rāi left his flag and standard in their places, fled from Banarasi to Arkanid. The Imperial forces surged like waves. Troops became engaged some after, or in pursuit of Ahmad Khān, others in rapine and pillage of the fort, and its extirpation. Rānā Sahasmulk (?), the *Shahna* (or Prefect of the army) secured the Rāi's elephants. Ahmad Khān humbly begged for his safety. He had the good fortune of kissing the dust of the august threshold. He was especially favoured with manifold acts of grace and *Khil'ats*. The forces, engaged in murder and the pillage of the outskirts of Jājnagar, were recalled. Favour was extended to all.

I regret that certain important passages could not be deciphered or understood. The above passage comes between the beginning and end of the document already noticed. This deed was, no doubt drawn, after the so-called engagement with the Rāi's force. Was 'Aynu'l-Mulk present at Jājnagar? The context shows that the draft of this affidavit with a statement of the Imperial army's victory in the Jājnagar expedition was prepared not long after that event. It is stated by 'Afif that on His Majesty's return journey, the guides lost their way, proceeded over mountains, plains and banks of wide rivers. The army was quite in despair and utterly worn out with the fatigues of the arduous march. Provisions became scarce, and the men were reduced to the verge of destruction. The Sultān's army at length, after enduring great privations and hardships came out into open country. It is probable that during this critical time, extending to six months, when Firūz Shāh was doubtful of his position, and apprehensive of the loyalty of his army, he caused this extraordinary deed—reminiscent of his recent victorious excursions—to be prepared and sworn in. It warns those *who were present with His Majesty*, that he must be obeyed as he was the Vice-regent of the Imām of Islām. The officers with Firūz were administered oath, and made to sign the deed, lest they would mutiny and desert the Sultān. 'Afif

has very discreetly omitted to notice this affidavit and the causes that led to it.<sup>1</sup>

The second instrument on Jājnagar is a 'Arzadāsh̄t or petition, which 'Aynu'l-Mulk Māhrū presented to His Majesty, in response to the narrative of the victory (*Fath-nāma*) a copy of which was sent to him through the Masnad-i-Āli. He writes that he went to welcome it substituting his forehead for the feet, and receiving the same with the hand of adoration; and having duly performed the ceremony of kissing the earth (*Zamīn-būsi*, prostration) towards His Majesty's throne. From the *Fath-nāma*, he got three good news. No blessing as that could compare, in the two worlds within four elements and under six directions to what had been reflected from Almighty God's mirror of unlimited mercy. The threefold glad tidings, were: *first* His Majesty's personal safety; *secondly*, the conquest of the territory of Jājnagar; and the overthrow of its ill-starred Gajpat Rāi; *thirdly* the safe return of His Imperial Majesty's high standards to the Capital.

<sup>1</sup> My attention has kindly been drawn by Mr. W. Ivanow to the following passage in the *Jawam'i'ul-Kalam*, which contains the sayings (*Malfūz*) of Sayyad Muḥammad Gisū-Darāz (720-825 H. = 1320-1422 A.D.) (A.S.B.'s MS. E 114):—

از مملووظ حضرت سید محمد گیسودراز قدس الله سره مسمی بجوامع الکلم  
فرمودند روزی سلطان فیروز دهلی بجانب جاج نگر رفت و بعضی منجمان  
و درویشان شهر اتفاق کردند که باز نیاید - بندگیخواجه روزی مرا فرمودند که  
در باب پادشاه چه میگویند هیچ سخن بتصریح نگفتم فرمودند مردمان چیزى  
میگویند گفتیم آری دوم روز کس بر خائنجهان فرستادند که تعجیل تر بر پادشاه  
کس فرستد که هر شب چهار من نان زیر سر بالین بدارد باصداق بفقیران بدهند  
چون بسلامت باز آمد بر مولانا جمال الدین فرود آمدند این ضعیف که نیک  
مخلص و معب و مصاحب بندگیخواجه بود رفتم برو او هم میگفت که باز نیاید  
و نیک در کار نجوم مهارتی تمام داشت گفت لابد امیر سید علم نجوم علم ظن  
و تخمین است و بدان طالع که سلطان محمد بیرون آمده بود که باز نیاید این  
مرد نیز بیرون شود باز آمد \*

It purports that certain astrologers and darwishes had predicted that Sultan Firūz Shāh would not return from his Jājnagar expedition. The Saint sent a man to Khān-i-Jahān requesting him to send a messenger to the Sultan asking the latter to keep under his head four *mans* of bread at night, and to distribute the same to the poor the next morning. When the Sultan returned the compiler of the *Mal'uz* was told that astrology was rather a matter of opinion and conjecture.

The writer proceeds: "When His Majesty's victorious standards and flags departed towards Lakhnauti, the Rāi, of course, did not behave himself quite loyally, and darkened his prospects with fraud and deceptive tricks. He declined to deliver elephants *in toto* and put in motion the chain of hypocrisy by one or two elephants, and kept His Majesty four to five months on the way; and said that the journey from where His Majesty was encamped to the *Iqlīm* of Jājnagar was too long and tedious and unpracticable. It was, he imagined, impossible for the army of Islām to traverse this distance, full of difficulty and darkness (rivers and forests), and invade the Rāi's country. Owing to these, the Rāi shook his head from the yoke of allegiance." The object of the expedition was, says 'Aynu'l-Mulk, to break the idols, to shed the blood of the enemies of Islām, to hunt elephants, which were in abundance in the darkness (dense forests) about Padamtak Unal (?) (Padam Talao or Padmavati of Badayun and Yahyā), as no one from the beginning of the world, till the present age, or since the morning of His Majesty's sovereignty, had found so much *shikār* (game) as those, to view the beauty of the deep sea, and to visit that beautiful Jājnagar whose beauty was told by intrepid travellers of sea and land with great exaggeration. Besides, as all the divisions and parts of the Indian Empire, from east to west, near and distant, has come under His Majesty's prosperous rule, and all are happy and contented and as the Arabian Sea (دریای عرب), (meaning here the Bay of Bengal) has been always under his or his minister's (Governor's) rule, so His Majesty started on the expedition, relying on God, and the first victory was gained over Jājnagar. And the fort of the Rāi, was pulled down as writing wiped out from the paper. In the twinkling of an eye, such a stronghold with its surroundings were taken possession of by the sword of the valiant soldiers. A large number of the slain and an immense pile of the ruins were the result. Secondly, the conquest of the city up to Siram which is one of the chief tracts, whose citadel is the strongest in Jājnagar, and whose kingdom is called Tebya (?) was brought under subjugation. They have never been reduced by any force, and have never paid tribute to anyone; but they were reduced by His Majesty's invincible army, and the booty taken was immense. Lastly substituting his head for the feet, (the Rai) greeted His Majesty by placing his head on the ground, and prayed that as his uncle and grandfather had already been taken prisoners by His Majesty's men, so he should ever be an obedient slave of the throne. Following the custom of the Hindus, he fell flat on the ground, and from the forehead to the nail of his feet, he threw his entire body on the ground. He then stood up and presented 230 *pūls* (small copper coins) to His Majesty's threshold.

Out of the nineteen celebrated elephants, the Rāi sent to His Majesty eighteen. No crown head had such elephants in his *pīlkhāna*. They were such that it is impossible to describe their excellence. No poet can describe them, no painter can paint their excellence. Everyone of them were as majestic as mountain, and more formidable than the latter. In size and gait each was better than the other. The Rāi petitioned the throne that he had 54 elephants, of which 18 were now sent, and 8 had already been presented. He had given 28 more to Aḥmad Khān and Bālī Patār for presentation, retaining only one, to preserve the title of Gajpati (Lord of the Elephants). He would send it, if His Majesty so desired. He also agreed to send all the elephants that might be brought to Banarasi<sup>1</sup> for His Majesty's *pīlkhāna*, through the Malik of the frontiers. And as he had become His Majesty's vassal he agreed that so long as he lived, he would never disobey His Majesty's commands. These agreements and covenants were confirmed by solemn affirmations according to his (Rāi's) creed. The Sultān, becoming convinced of the Rāi's good faith and sincerity, ordered its ratification.

His empire was more extensive than one can imagine; the buildings and cultivations more numerous than one can calculate. Every village was like a town, every edifice a city. Every idol-temple was a sight. Its soil, owing to verdure was like the clean face. The sky of its gardens was from their flowers like the garden of Heaven. The Rāi did not fully grasp the honour of submission, that he squandered away such a country.

When the Rāi's men came with the elephants and riches before the throne, and rubbed their heads on the ground, they gave their blessings and requested for forgiveness and amnesty. His Majesty granted their request. He bestowed on (the Rāi) *Khil'ats* and favour. His men were favoured with clothes and gifts.

After the conclusion of these victories (بعد حصول این فتوحات) His Majesty proceeded on boat, sight-seeing in the river, up to the temple of Jagannath (Puri) and Marhat (?). The Emperor left for his Capital, Dihli. The war booty taken was distributed according to Law, one-fifth going to *Baytu'l-Māl* (Public Treasury), and four-fifth in the name of God, the Lord, in accordance with *farāyṣ* (Divine order)."

Mention is made for building mosques, and other Islamic institutions (شعائر اسلام).

With reference to the above two documents,\* I may observe that when any great victory was gained, an Imperial

<sup>1</sup> It is clear from this that Banarasi was the capital of the Rāi of Jājnagar.

Fath-nāma, or memorandum, detailing the victory, used to be circulated among prominent men. A similar account of victory was written by Sultan Ghiyathu'd-Din Balban's special Secretary, Qiyāmu'd-Din Dabir, on the former's signal victory over Tughrul, King of Lakhnauti in 1279 A.D. The document was long read for the beauty and elegance of its language (vide p. 91 Ziyā-i-Barani's History).

In Shams-i-Siraj Afif's History of Firūz Shāh and other histories, no mention is made of Firūz Shāh's intention of returning to Jājnagar—a tedious and hazardous journey—once he had left Bengal, after the peaceful termination of Lakhnauti affairs, and proceeded so far as Jaunpur, where he passed the rainy season. It may be gleaned from 'Aynu'l-Mulk's review that Gajpati Rāi did not come to amicable terms with Firūz, disobeyed his orders, and declined to send elephants. He gave him cause of further displeasure by despatching one or two only according to his pleasure. Of all monarchs, Firūz Shāh, set great value on elephants as noted by his chroniclers. What a Railway train is in our time, so a large number of elephants was in his. If we read the account carefully, we can find the *casus belli* to be no other than his fondness of hunting and catching elephants. Other causes were no doubt put forth by his secretaries and Dabirs, but the chief one was elephant-hunting.<sup>1</sup>

The Rāi of Jājnagar, before the arrival of the Imperial army, had left by boat. The two places mentioned by Mahru, Arkanid, and Sarang-garh are not to be found in Afif. Sarang-garh is noted in the map not far from Katak. According to Stirling the Raja of Sarangarh had the mansab of 500, exclusive of Mahals, Kellas and Zamindaris. The Rai left two officers—probably military—to carry out the engagement with the Emperor, viz. Ahmad Khan, a Muhammadan, and Bali Patar, a Hindu, before he left for Arkanid (?). The word is doubtful or misspelt. There was hardly any skirmish, as the Rāi's generals let the elephants adrift and fled. The *Shahna* or the military prefect, as appears from the name, Sahasmuk (سہاسمک ?) was a non-Muhammadan, who secured the elephants. It is a significant fact that the potentate of Jājnagar had a Muhammadan general or officer in his employ. The manner in which the Rāi and his patars or officials prostrated is new, and must have astonished and amused the Turkish monarch, and his Court. This way of prostration, called *Sastanga Dandwat* is still prevalent in Orissa, and other Hindu States and shrines. The fact that the Rāi's uncle and grandfather were made prisoners is only mentioned by 'Aynu'l-Mulk.

The booty and presents received by Firūz Shāh and his

<sup>1</sup> With Firūz Shāh used to march ninety thousand soldiers, four hundred and eighty elephants.

men were no doubt immense, and more than they expected. The beauty of Katak Baranasi has been chronicled by all historians and travellers. The copper coins, known as pūls, may seem very small, but their purchasing value was inconsiderable in those distant days as we may judge from Ibn Batūta's travels of the time.

Firūz Shāh's main purpose of the journey was elephant-hunting, though hedged round by other reasons by the writer of the account of victory, and by 'Ayni-Māhrū. *Veni, vidi, vici* (I came, I saw, I conquered) is what this good sport-loving emperor might have said on the result of his expedition to Jājnagar. He broke no idol, pillaged no shrine. While he pursued the Rāi, he turned back to hunt. He went to see the celebrated temple of Jagannath, at Purī. What 'Afif says that, he carried an idol named Jagannath, found at the Rāi's fort, is not borne out by Māhrū. Perhaps he wanted it for his Museum. He went to Purī to view and admire the famous Jagannāth.

The itinerary of Sultān Firūz Shāh's expedition as given by 'Afif and 'Ayn-i-Māhrū are verbose, though they were contemporary writers. Their geographical description of the various stages of the expedition is not quite convincing. 'Aynu'l-Mulk's letters and despatches do not give us full light on the question, as they have come to us in a mutilated condition.

It is believed that the Emperor had been to Katak-Baranasi (vulg: Banarasi and Biranasi). Badayuni's brief account is more clear and connected "... at the close of the year, 761 H. (1360 A.D.)" says Badayuni "he (Firūz Shāh) marched... towards Jājnagar... and by uninterrupted marches arrived at Satgarh, the Rāi of which place withdrew, and then he came to Baranasi, which was the abode of the Chief Rāi (Rai *buzurg*) and crossed the river Mahandari, and the Rai of Baranasi having taken to flight made with all haste to Telang (Telangana). The Sultān pursued him part of the way, turned back to hunt and arrived at the country of Rāi Parethan Deo, who sent a present of thirty-two elephants, and other costly offerings."<sup>1</sup> Here Badayuni who not only follows 'Afif, but also some other authority mentions three Rāis, viz. of Satgarh (or Sarangarh of Māhrū), of Banārasi who was the *Chief Rāi*, and of Rāi Pethoria Deo.

All doubt about Firūz Shāh's expedition to Jājnagar is, however, set at rest by Yahyā ibn Aḥmad's *Tārikh-i-Mubārak-shāhi* (Elliot—Dowson Vol. IV, pp. 10–11). Badāyuni and Firishṭa follow him. After the rains, writes Yahyā, Firūz Shāh, left Jaunpur in Zil-hijja, 761 H. (May 1360 A.D.) and marched

<sup>1</sup> Badayuni as translated by George S. A. Ranking, M.D. &c. (B.I. Edition). The Persian text agrees with the translation.

by way of Behār to Jājnagar. When the Sultān reached *Sikra* (Mahru Sarangarh and Badayuni *Satghara* or *Satgarh*), he attacked it, and the Rāi took to flight. When he advanced further Ahmad Khān<sup>1</sup> joined the Sultān from Lakhnauti in the hills of Ranthor. The Sultān then proceeded to the City of Banarasi, which was the residence of the Rāi. Having left Mahanadi, the Rāi (of Banarasi) had fled to Tilang. The Sultān pursued him for one day's March, but when he found that the Rāi was far in advance, he returned. In this neighbourhood the Sultān hunted. Rāi Bir Bhan Deo sent some persons to sue for peace. The Sultān turned aside, and the Rāi sent in 33 elephants and rich offerings as tribute. From thence he fell back and hunted in Padmavati and the elephant fields. Reached Delhi in Rajab 762 H. (October 1361 A.D.).

According to A. Sterling (Orissa: Reprint, 1904) the denomination *Biranasi* has been confined to a village near the point of separation of Mahanadi and Kafori (Kathajori) rivers, about four miles distant from Katak. Katak became a capital city of the Ganga Bansi dynasty at the end of the tenth century. Chandhwar, Jājpur and Pipli divided with it at different periods, the honour and advantage of accommodating the Hindu Court of Orissa. Whatever may be the origin of the name, by Jājnagar, it appears to me that Orissa was meant. Seven centuries ago, I think Lakhnauti stood for the greater part of Bengal, Tirhut for a considerable part of Behār, and Jājnagar for the greater part of Orissa—excluding native states and Telangana. Among the countries of India Ibn Baṭṭa mentions Jājnagar, and not Orissa (Udissa).<sup>2</sup> In a verse Shams-i-Sirāj 'Afīf (p. 169) says: "When (the Sultan) carried his arms to Jājnagar, he overran Udissa from one end to another (completely)." It appears from subsequent couplets that while Firūz Shah arrived at Jājnagar, his arms penetrated into wider tracts, beyond Jājnagar, for the purpose of elephant hunting. This may mean that Firūz not only subjugated the country immediately under the Rāi of Jājnagar (or Katak) but that of the other Rāis who ruled in other parts of the country. Badayuni commences the description of the expedition as that of Jājnagar, but in the course of the narrative, never once mentions Jājnagar, but other places. Such is also the case with other Persian historians.

It is to me now clear that the Rāi of Banārasī or Katak-Banārasī was the chief potentate, and had the title of the

<sup>1</sup> He appears to be a different person from one in the employ of the Rāi of Jājnagar.

<sup>2</sup> Among dominions of the Sultān of Dihli noted by Shihabu'd-Dīn Abū'l-'Abbās Ahmad (697-749 H.=1297-1348 A.D.), in his *Masāliku'l-Absār fi Mamāliku'l-Āmār* Jājnagar and Lakhnauti are mentioned and also Bihār—*Vide* Elliot-Dowson III.

“Rāi of Jājnagar.” His relatives as well as his dependent Rāis lived in close proximity as Jāgirdārs or holders of maintenance allowances. In this expedition Firūz Shāh not only pursued the chief of Katak-Banārasī, but other chiefs, and took the chief Rāi’s uncle and grandfather prisoner. We do not know why Katak-Banārasī was called Jājnagar, but there is no doubt, that Katak and its neighbourhood were called Jājnagar. Further, if we look carefully we find that there is no material differences in the itinerary given by different writers (‘Afif, Māhrū, Yahyā, Badāyuni and others) from Jaunpūr to Katak-Banārasī. The only point that is not clear is the route traversed by the Imperial army, on the return journey from Jājnagar to Dihli. It was probably at first through Tilangana and Southern India. But the army experiencing unforeseen hardship and privation, the previous route was adopted. The Sultān must have lost his way in the forests and hills of the Orissa Tributary or Jangal Maḥāls of our time.

Again, the present of elephants, according to ‘Afif was 20, by the Rai of Jājnagar; and according to Badayuni 32 by the Rai Parithan Deo—which come to 52. According to Yahya, Rāi Bir Bhan Deo presented 33 elephants. This number falls short by 21 or 20 of Malik ‘Aynu’l-Mulk’s 73. Māhrū is rather inconclusive, for he states what Jājnagar had offered, but it is not known how much Firūz Shah actually accepted and allowed the Rāi to retain, to support his title. It is inconceivable that Firūz allowed only one elephant, and not more to the “Lord of the Elephants.” Firūz Shāh took to Delhi 73 elephants from both Lakhnauti and Jājnagar, which were painted and exhibited (*vide* p. 172 and p. 175 ‘Afif’s’ *Firūz Shāhi*). But the total was certainly more than this number, as it excludes ordinary elephants taken in hunt, as well as from Lakhnauti, Jājnagar and other places.

#### ADDITIONAL NOTE TO p. 283.

I think that this document, discussed on this page, though included in the “Letters of Māhrū,” could not be drafted by him, as otherwise, ‘Aynu’l-Mulk would not have acknowledged the *Faḥ-nāma*, which he received through the Masūd-i-‘Alī and congratulated the Emperor on his safe return to Dihli. There may be other similar documents in this collection not actually drafted by ‘Aynu’l-Mulk.

## 21. A Manuscript Koran in Classical Armenian.

By MESROB J. SETH, M.R.A.S.

Some ten years ago the non-Armenian widow of a former Armenian teacher in the local Armenian College told me that she had found amongst her late husband's Armenian books, a Manuscript Koran in the Armenian language and that she had sold it to Her Highness the Begum of Bhopal for the sum of five hundred rupees.

When I heard this it was too late to try and rescue the valuable manuscript for the nation as it had been sold and paid for already, and after many vicissitudes found a last resting place in the Bhopal State Library amongst the many valuable illuminated Korans that adorn that Library.

In February 1922, my friend, Father H. Hosten, S.J., the enthusiastic antiquarian, paid a visit to Bhopal to complete his researches into the family history of the Indian branch of the Bourbons who flourished at Bhopal and Marwar during the seventeenth and eighteenth centuries and played an important part at the Courts of the mighty Moguls from the great Akbar downwards.

Before leaving Bhopal, the learned Father, at my request, paid a visit to the State Library where he was shown, amongst other works, the Armenian Manuscript Koran, which was described to him as a Yunani (Greek) Koran. He drew the attention of the Librarian—a Bengali Protestant Christian—to the mistake and told him that it was not a Greek but an Armenian Koran and that if he would take the trouble to send it down to me, I would be able to write a note about it as regards its antiquity.

In May 1922, the Political Agent at Bhopal, Lieut.-Colonel C. E. Luard, very kindly sent me the Koran with the request that I should supply information as regards its merits and age. But my troubles began when to my great disappointment I found that the title page was missing, as it would have given the date when, and the place where the translation was made. Fortunately there is a short colophon at the end of the Manuscript which happily discloses the name and birth-place of the learned translator. With such scanty and meagre information at my disposal, nothing daunted, I took up the flimsy thread of my researches and, for about a year, I consulted every likely source—historical, biographical and bibliographical—for the desired information, but without any success. I was about to return the Manuscript to Bhopal when suddenly the sun shone on my endeavours for I found in a very rare Armenian

work by Father Arakiel, the Armenian historian of Tabriz in Persia, and published at Amsterdam in 1669, an account of the life and works of the translator of the Koran from a Latin version. With this valuable information, I was at last able to discover the age of the present Manuscript.

The laconic colophon at the end of the Manuscript is as follows :—

Կատարեցաւ Ղուբն թարգմանեալ է Լատինացոյ Բարբառոյ Ի  
Հայոց լեզու : Չեւաթի Լուեհաննոսի իւրեկցւոյ իմաստնոյ Բանասիրի և  
Բանիբուն Վարդապետի : Չոր ՏԴ ՄԾ Վարձահատոյց լիցի : ՎԱԷն :

It may be translated as follows :—

“ Here endeth the Koran translated from the Latin into the Armenian language by Stephanos of Ilov, a profound scholar and an erudite doctor, whom the Lord God may reward. Amen.”

Arakiel, the Armenian historian of Tabriz in Persia, who was a contemporary of “the profound scholar and erudite doctor,” after relating the literary activities of the inmates of the great Armenian Monastery at Etchmiatzin (the Vatican of the Armenians) near Erivan in Armenia, speaks of the learned translator of the Koran in his “Historical Miscellany,” (pp. 398-400) as follows :—

“After them, we shall now relate the literary attainments of another person who led a very pure life and whose name was Stephanos.

He was a native of Ilov in Poland, the son of pious parents and came of a noble and wealthy Armenian family. In his younger days he had been educated in the Latin language and had studied Grammar and Rhetoric. And at the time when Bishop Nicole of Ilov was attempting to force Roman Catholicism upon the orthodox Armenian inhabitants of that town and was harassing them, the pious parents of Stephanos, for the sake of orthodoxy, sent him from Ilov to the Armenian Monastery at Etchmiatzin in Armenia in the days of the Catholicos Phillippus in 1635.<sup>1</sup>

There at Etchmiatzin, Stephanos learnt the classical Armenian language committing to memory the Psalms and all the chants and services of the Armenian Church. He then commenced reading the Holy Bible in classical Armenian and as he knew Latin thoroughly, he would philologically compare the two versions and then contemplate, whereby he surpassed his companions in literature. He possessed a sharp and creative intellect and a receptive and retentive memory and was a

<sup>1</sup> The Catholicos is the supreme head of the orthodox Armenian Church whose See is at Etchmiatzin in Armenia.

great reader, a modest person and led an exemplary pure life.

The Fathers at Etchmiatzin seeing his erudition, and saintly life, strongly recommended him to the Catholicos Phillippos who having himself noticed the work of Stephanos, ordained him as a monk and then invested him with the powers of an Archimandrite or doctor.

Henceforward the Archimandrite Stephanos gave himself up entirely to literary work and translated four works from the Latin into Armenian.

The first of these was Josephus, the Jewish historian, not the entire work, however, but that part only which relates to the city of Jerusalem and the wars of the Jews, in 6 volumes.

The second was the book of Dionysius the Areopagite. There existed already another translation of this work in the Armenian language by Stephanos of Suini, but this was difficult to understand, whereas this second translation was perfect in every respect.

The third work was called the Book of Rationalism. It is a theological work in 36 chapters.

The fourth is a book of Parables and relates to the lives and morals of man as a guide for everybody. The Latin title was "The Mirror of Behaviour" and the same title was preserved in the Armenian translation. It is a book replete with sweet words and pleasant sayings.

These are the services which he [Stephanos] has rendered to the Church so far."

Now let us try and determine the age of the present Manuscript from the valuable information recorded by a contemporary of the translator of the Koran from a Latin version.

Arakiel the historian says it was the Catholicos Phillippos (elected on the 13th January 1633) who ordained Stephanos as an Archimandrite, and as the Archimandrite displayed great literary activity soon after his ordination and during the life-time of his patron, the Catholicos, it is quite possible that the present translation of the Koran from the Latin was undertaken before the death of the Catholicos which occurred in 1655.

It may be argued, however, that as there is no reference to the above translation in the work of Arakiel the historian which appeared at Amsterdam in 1669, it could not have been undertaken before that date, but then Arakiel's "Historical Miscellany" was published not during the life-time but several years after the death of the author owing to the great scarcity of Armenian printing presses in those days. And I may mention, *en passant*, that it was also at Amsterdam that the first Armenian Bible was printed in 1666.

Before concluding this paper, I must say a few words as

regards the merits of the Manuscript before us. Its calligraphy and penmanship, in which great skill and artistic taste have been displayed, is simply perfect, whilst the language in which the translation is made—and this is classical Armenian—is not only elegant but sublime and can vie with the beautiful and unrivalled style of the best classical Armenian writers and translators of the fifth century—the Golden Age of Armenian literature.

One may therefore, indeed, congratulate Her Highness the Begum of Bhopal for having secured such a valuable treasure.

## 22. Note on an Early Persian Work on Ethics.

By W. IVANOW.

Early Persian *prose* works composed in the V and VIc. A.H./XI-XIIc. A.D. never have been very numerous. In those times many learned authors still preferred to write in Arabic. Others were not lucky enough to draw the attention of the public to their works and have never emerged from obscurity. Of this originally limited literature comparatively little remains nowadays, and every new find of an early composition of this kind presents special interest to students.

In the library of the Asiatic Society of Bengal there are several works of this period, dealing with medicine, Sufism, theology, occult sciences, etc. Some of them are rare, but known in other libraries. Others have never been described, such as, for instance, the hagiological treatise by 'Abdu'l-lah Anṣārī, the *Ṭabaqāt*, which is very interesting with regard to its linguistic side,<sup>1</sup> and also the *Unsu't-tā'ibin* by Aḥmad-i-Jām.<sup>2</sup> To this class also belongs the work which is the subject of the present note.<sup>3</sup>

It is a comparatively lengthy treatise on ethics and politics, apparently composed between 503 A.H./1109 A.D., and 508 A.H./1114 A.D., by Abū'l-Qāsim Naṣr b. Aḥmad ash-Shādānī an-Nishābūrī. The first date is referred to several times (cf. ff 7v, 144, etc.) as the year in which the author visited Ghaznī.<sup>4</sup> The second date is the year of the death of the Ghaznawide prince Sultān Mas'ūd (III), who reigned 492-508 A.H./1099-1114 A.D. He is much eulogised by the author, and from the nature of the epithets used in these glorifications it may be concluded that he was still alive at the time of the composition of the work.

According to a statement in the colophon this is the *first* volume of the whole treatise. Unfortunately, in this copy the introduction and the first *bāb* are lost, and there are no indications as to the general plan or the size of the whole work. The title is given in the same colophon in a peculiar

<sup>1</sup> For a detailed account of this work see No. 234 in the Catalogue of the Persian MSS. in the collection of the A.S.B., and a special paper in the J.R.A.S., 1923, pp. 1-34, 337-382.

<sup>2</sup> Described in detail in the Catalogue, No. 1169.

<sup>3</sup> See a brief note in the same Catalogue, No. 1370.

<sup>4</sup> Cf. f. 7v: *من در سنه ثلث و خمسمائه در حضرت غزنين بودم*. Or f. 144:

*مصنف كويد كه من در سنه ثلث و خمسمائه ديدم الخ*

form as *Ganjū'l-ganj*, and is most probably not genuine. The author apparently possessed good knowledge of Arabic and could not invent such an unnatural expression.

This first volume is divided into six *bābs*, of which only five are extant. They deal with the usual topics of moral doctrine, recommending different virtues, such as reasonableness (*bāb* II), energy (*bāb* III), other general qualities useful in administration (*bāb* IV), etc. The fifth *bāb* gives some moral maxims on various subjects, and the sixth contains anecdotes about the legendary ideal officials who lived under Chosroes (Kisrā).

Each of these *bābs* is uniformly divided into many unnumbered *faṣls*, and the latter, in their turn, also uniformly consist of two unequal parts: a short exposition of the general moral rules, and then an illustration of their application to practical life. The first part of these *faṣls* is of a purely dogmatic nature, containing very little of philosophy, or theory in general. There are also very few special political and administrative questions involved, but the majority are moral rules of the most elementary nature.

The author does not mention the sources from which he has compiled his book.<sup>1</sup> The maxims contained in the work are attributed to a small number of authorities, almost all legendary: Buzurjmihr, Socrates, Aristotle, Alexander the Macedonian, and 'Alī ibn Abī Ṭālib, son-in-law of the Prophet.<sup>2</sup> None of these aphorisms and maxims have, indeed, anything to do with the historical persons to whom they are ascribed. Only one authority may be more historically authentic, i.e. Abū 'Alī, who probably is identical with Abū 'Alī b. Sīnā, or the famous Avicenna (d. 428 A.H./1037 A.D.), to whom some works on ethics are attributed, especially the *Zaḡar-nāma*, a translation from the Pehlevi.<sup>3</sup>

From the point of view of philosophy, as mentioned above, the work hardly deserves attention. Its value lies in another direction: in the large collection of historical anecdotes which the author gives for the illustration of moral rules. Some of them apparently are taken from rare early sources. Others may be based on oral tradition and deal with events, not very remote from the author's time.

<sup>1</sup> I have noticed only one reference (ff. 25v-26):

خواجہ عبد الحمید در کتاب کنج خرد آورده است الخ

<sup>2</sup> His presence amongst the ancient sages probably is due to the author's Shi'itic tendencies, which are manifest from some epithets added after 'Alī's name. On f. 29 there is added عليه الصلوات والسلام which could not have been used by a Sunnite.

<sup>3</sup> Cf. the Catalogue of the Society's Persian collection, No. 1369, where references to other catalogues are given.

Below is a list of the principal historical anecdotes, arranged chronologically under the dynasties and periods to which they pertain.

1. *Muhammad and the first khaliḥs*: ff. 35, 48v, 65v, 136 (about Ḥusayn, son of 'Alī), 166, 214, 219, 224, 315.

2. *Omayyades*: Mu'āwiyya (41-60 A.H./661-680 A.D.) (ff. 219, 315). 'Abdu'l-Malik b. Marwān (65-86 A.H./685-705 A.D.) (f. 64). Hishām b. 'Abdi'l-Malik (105-125 A.H./724-743 A.D.) (ff. 197, 249v). To this dynasty belong also the anecdotes concerning Al-Ḥajjāj b. Yūsuf (d. 95 A.H./715 A.D.) (ff. 84, 105, 106, 124, 130, 179, 214).

3. *Abbasides*: Abū'l-'Abbās as-Saffāḥ (132-136 A.H./750-754 A.D.) (ff. 248, 300v). Mansūr (136-158 A.H./754-775 A.D.) (ff. 9, 112, 188v, 192, 198, 314). Mahdī (158-169 A.H./775-785 A.D.) (f. 297). Hārūnu'r-Rashīd (170-193 A.H./786-809 A.D.) (ff. 88v, 119, 126, 161, 196, 222, 260v, 270v, 330v). Ma'mūn (198-218 A.H./813-833 A.D.) (ff. 13, 30, 56v, 85, 93v, 108-111, 138v, 141, 147, 150, 153, 251, 253v, 278v, 339). The latter two groups contain a great number of anecdotes connected with the Barmekides (cf. also f. 133v). Mu'tasim (218-227 A.H./833-842 A.D.) (ff. 165, 325v). Mutawakkil (232-247 A.H./847-861 A.D.) (ff. 294v, 335). Mu'tadid (279-289 A.H./892-902 A.D.) (f. 206v). Muqtadir (295-320 A.H./908-932 A.D.) (f. 205).

4. *Tāhirides*: Tāhir (205-207 A.H./821-822 A.D.) (f. 32).

5. *Saffārides*: 'Amrw b. Layth (265-287 A.H./879-900 A.D.) (ff. 11, 38, 42v).

6. *Sāmānides*: ff. 17v-23v (beginning of the dynasty).

7. *Ziyārides*: Qābūs b. Washmgīr (366-403 A.H./976-1012 A.D.) (f. 24, sq.).

8. *Būyides*: f. 202 (Hasan b. Būya's campaign in Armenia); 'Adudu'd-Daula (338-372 A.H./949-983 A.D.) (f. 40v) (his justice).

9. *Ghaznawides*: ff. 27 (Maḥmūd); 54 (Sabuk-Tegīn's career); 68v (Maḥmūd's returning from Somanat); 71 (Maḥmūd and Indian politics); 186 (Bilga-Tegīn and the rise of Sabuk-Tegīn); 217 (Maḥmūd); 225 (Tughān Tegīn, Sabuk-Tegīn, and the campaign against Bust).

In addition there are also anecdotes concerning different eminent men, not directly connected with definite dynasties. India is several times referred to (ff. 45v, 74, 267), but the stories are of the nature of fairy tales.

A great number of legends refer to various Sasanide kings, especially the popular Bahrām-Gūr, Khusraw and Anūshīrwān, ff. 59v, 62, 75v (story of Barbad), 143v, 163, 173, 175v, 180v, 183, 220, 229, 230, 231, 232, 234, 236v, 238, 239, 239v, 243, 244, 244v, 245v, 256, 256v, 257v, 264, 280v, 312, 319, etc. Some anecdotes of the same class deal with Alexander (ff. 78, 184, 235v). There are in these stories interesting legendary

motives, or traces of ancient beliefs as to the magical power of kings (cf. the anecdotes concerning the connection of rain with the king, given on f. 236v, sq.; or on the dependence of the health of flock on the king's will, f. 180v, etc.).

Some stories containing animal fables (cf. ff. 80v, 90, 97, 191v, 194v, 211v) may be interesting for folkloristic studies.

Only a few anecdotes touch on Sufic matters (ff. 82v, 171v), referring to some famous early Sufis. They contain nothing of special interest, however.

The language of the book is appreciably modernised in the present transcript (which is of Indian origin and dates from the XIIc A.H./XVIIIc. A.D.) Traces of its more archaic diction are plentiful, such as, for instance, the frequent use of *اندر همی*, of the so-called conditional *ی*, and other occasional obsolete forms.

Many poetical quotations, both in Arabic and Persian, are scattered throughout the book. The majority of them apparently belong to the author himself. Only very rarely does he quote other poets, such as 'Unṣurī (p. 252v), and 'Asjadī (f. 68v).<sup>1</sup>

On the whole this old work does not present, as far as I have been able to ascertain, anything very remarkable, but there is no doubt that it well deserves careful study, which may yield some interesting information.

7th April, 1924, Calcutta.

<sup>1</sup> This quotation is probably taken from an eulogy on Maḥmūd of Ghazna, as it alludes to his Somanat campaign.

تا شاه خسروان سفر سومانات کرد  
 کردار خویش را علم معجزات کرد  
 آثار روشن ماکان گذشتہ را  
 نزدیک بخردان همه از مشکلات کرد

### 23. More on the Sources of Jami's Nafahat.

By W. IVANOW.

In my note on the sources of Jāmi's well-known hagiological work *Nafahātu'l-uns*,<sup>1</sup> I mentioned as one of Jāmi's probable authorities a treatise which he calls *Risāla-i-Iqbāliyya*.<sup>2</sup> The work in question was not accessible to me at the time when the former article was written. Only after the paper had already been set up in type I found a MS. of the *Iqbāliyya*, although under a different title, in the Imperial Library, at Calcutta.<sup>3</sup> Having examined it I am now in a position to give precise information concerning it, and thus to complete and correct what is said in this connection in my former article.

The work is a collection of summaries of the instructive discourses of the mediaeval Persian Sufic shaykh 'Alāu'd-Daula Ruknu'd-Dīn Aḥmad b. Muḥammad b. Aḥmad b. Muḥammad al-Biyābānakī as-Samnānī,<sup>4</sup> who died the 22 Rajab 736 A.H., or 6th March 1336. The book belongs to the type of compositions which in India are usually called *Mal'ūzāt*. The discussions are of a rather encyclopaedic character, as always is the case with the diaries of this kind which record the subjects dealt with only in their chronological order, regardless of any system. Unfortunately, contrary to the practice of the majority of writers of this kind, the author of the present work does not give the dates of the discourses, and apparently even avoids giving any dates at all in his book. If the copy belonging to the Bodleian library, referred to in the foot note, contains precisely the same work, the date of the first *majlis* would be 724 A.H./1324-1325 A.D. This is probably quite correct, because the present work could not have been written before 721 A.H./1321 A.D. This may be inferred from the fact that

<sup>1</sup> See Journal and Proceedings of the Asiatic Society of Bengal, vol. XVIII (1922), pp. 385-402.

<sup>2</sup> See op. cit., pp. 400-401. Jāmi refers to it in the *Nafahāt* (Nassau-Lees' edition, Calcutta, 1859) on pp. 545, 644 and 685.

<sup>3</sup> See Cat. of the Pers. MSS. in the Būhār library, Calcutta, 1921, No. 184, where it appears under the title *Mal'ūzāt-i-shaykh 'Alāu'd-Daula*. Apparently a slightly different version of the same work is described under the title *Chihil majlis* in E. Sachau and H. Ethé's Catalogue of the Persian MSS. in the Bodleian library, No. 1446. The initial words coincide in both, but further on the texts seem to differ.

<sup>4</sup> Biyābānak (now pronounced as *Biobunak*), is a dreary, arid and thinly populated district in the Dasht-i-kawīr, South of Samnān, with which in the course of history it has been almost always connected administratively and commercially. The chief places in it are Khūr and Jandaq.

'Alāu'd-Daula's own work '*Urwa*, or, to give it its full title, *Al-'Urwat li-ahli'l-khalwat wa'l-jalwat*,<sup>1</sup> which was completed in that year, is several times referred to in the book.<sup>2</sup>

The author of this summary version of the saint's lectures is his disciple Amir Iqbāl b. Sābiq as-Sijistānī.<sup>3</sup> He gives no particulars about himself and probably was not remarkable in any way.

The contents of this rare work are rather disappointing. There is practically nothing except vague and very general Sufico-moral discussions, a few biographical details of 'Alāu'd-Daula, and a number of very elusive and intangible allusions to the contemporary condition of Persia. Jāmī could not have derived much benefit from a perusal of this work. In fact he took from it some materials concerning the biography of 'Alāu'd-Daula and a few of his disciples<sup>4</sup> but it would not be surprising to learn that he also perused the '*Urwa*, because he gives several dates which are not found in the present work.<sup>5</sup>

The biography of the saint is sufficiently well-known and it is needless to dwell on it here.<sup>6</sup> The references in the present work are only to the period of the Shaykh's early days, before his final conversion to Sufism. He recalls his unpleasant position at the court of Arghūn, the Mongol Ilkhān of Persia (reigned 683-690 A.H./1284-1291 A.D.). His piety was subjected to affronts on the part of his drunken colleagues, who

<sup>1</sup> See Rieu, Supplement to the Catalogue of the Persian MSS. in the British Museum, 1895, No. 19. The work is also referred to by Hājji Khalifa, vol. IV, p. 197.

<sup>2</sup> Fol. lv:

حکایت بدایت خود را چنانکه در کتاب عروة مسطور است با او (the author) تَقْرِیر کرد  
Cf. also f. 36v.

<sup>3</sup> He often mentions his own name also in the text, cf. f. 47, besides giving it just in the beginning of the book.

<sup>4</sup> *Nafahāt*, pp. 500-515. Of the older generation there are three saints whose biographies are based on the book: Rādiyyu'd-Dīn 'Alī Lālā Ghaznavī (p. 500), Jamālū'd-Dīn Ahmad Jūrfānī (p. 502), and Nūru'd-Dīn 'Abdu'r-Rahmān Isfārānī Kisraqī (the *murshid* of 'Alāu'd-Daula, d. at Baghdād ca. 689 A.H./1289 A.D., p. 503). The disciples of 'Alāu'd-Daula are: Akhī 'Alī Miṣrī (often referred to in almost every *majlis*, p. 510); Najmu'd-Dīn Muḥammad b. Muḥammad al-Aukānī (p. 511); Muḥammad Dihistānī (p. 511); Taqiyyu'd-Dīn 'Alī Da'ūsī Samnānī (p. 514). Besides, the work is referred to in connection with the biographies of Najmu'd-Dīn Kubrā p. 483; Ibn 'Arabī, p. 644; and Auḥadu'd-Dīn Kirmānī, p. 685.

<sup>5</sup> He never refers to it, however, and its title appears (pp. 558, 561, 565) only in the text of the letter of 'Abdu'r-Razzāq Kāshī and of that of 'Alāu'd-Daula's reply to it (see below).

<sup>6</sup> See C. Rieu, Catalogue of the Persian MSS. in the British Museum, vol. I, p. 413, and especially the Supplement, No. 19. In the hagiological works his biography is given very often: *Nafahāt*, pp. 504-510; *Haft iqlīm*, H. Ethé's India Office Catalogue, No. 724, col. 463 (No. 1138); *Safīnatu'l-awliyā*, *ibid*, No. 647, col. 288 (No. 132); etc.

by way of a joke forced him not only to violate the fast of Ramaḍān but even to drink wine.<sup>1</sup> He ran away, but was brought back<sup>2</sup>; finally, however, he retired and settled at Šūfiābād, near Samnān, in the Khānqāh-i-Sakkākiyya,<sup>3</sup> where probably the present discourses were delivered.<sup>4</sup>

He was a follower of the affiliation started by Najmu'd-Dīn Kubrā,<sup>5</sup> and in his beliefs was probably a partisan of the strictly Sunnite conservative school of Sufis. This explains his hostile attitude towards the growing Shi'ite and Sufico-shi'ite movement which already assumed large dimensions under the Mongols,<sup>6</sup> and became victorious all over Persia under the Safawides. As he says, 'Now the world is captured by heresy, and the heretical parasites disguise themselves as godly men, calling perversion the divine guidance.'<sup>7</sup>

Very interesting in this connection is an allusion to the energetic Sufico-shi'ite propaganda carried on by the famous ancestor of the Safawides, Shaykh Ṣafīyyu'd-Dīn Ardabīlī (d. in 735 A.H./1335 A.D.). The whole passage is really typical: 'A darwish (in the *maḥlis* of 'Alāu'd-Daula Samnānī) mentioned Shaykh Ṣafīyyu'd-Dīn, who is at Ardabīl, saying . . . , that he always tries to get as many disciples as possible and to increase the number of his followers. He is very proud and says, that there is no other *murshid* except himself, and all people must come there in order that he may guide them. The Shaykh ('Alāu'd-Daula),—God sanctify his spirit!—said: 'Our time is a wonderful time. I always made inquiries concerning him (i.e. Ṣafī of Ardabīl). The people say that he orders his disciples to live honestly and be mindful of God. I liked him for these two points and used to say that it would be good if in such times there would be a thousand (shaykhs) like him.' (f. 3):

<sup>1</sup> Fol. 37.<sup>2</sup> Fols. 42-43.

<sup>3</sup> So it is stated by Jāmī, p. 504. The position of the Khānqāh is described by Jāmī as *قطب زمان* *عبد الدین عبد الوهاب مدفون* i.e. at his shrine. Jāmī gives the date of the beginning of 'Alāu'd-Daula's career as *murshid* as 689 A.H. / 1290 A.D.

<sup>4</sup> In the Bodleian copy it is clearly indicated in the first *maḥlis*.

<sup>5</sup> Kubrā's full name was Abū'l-Jannāb Aḥmad b. 'Umar al-Khiwāqī, d. 618 A.H. / 1221 A.D.

<sup>6</sup> There is a very rare and highly interesting book of his Shi'ite contemporary Hasan b. 'Alī b. Muḥammad Ṭabarī under the title *Kāmil-i-Bahā'i*, written between 675 A.H. / 1276 A.D. and 678 A.H. / 1279 A.D., which gives much interesting information concerning the state of the Shi'ite movement at that period. Cf. W. Ivanow, Catalogue of the Persian MSS. in the collection of the As. Soc. of Bengal, No. 1102.

<sup>7</sup> Fol. 3v. :

این ساعت جهان بر بدعت شده و حرام خواران مبتدع خود را بلباس  
مردان پوشیده اند و اضلال را ارشاد نام نهاده اند

درویشی حکایت شیخ صفی الدین که در اردبیل است آغاز کرد و گفت .....<sup>1</sup> پیوسته در طلب طالبان است و بکثرت مریدان است<sup>2</sup> تفاجر میکند و میکوبد غیر از من مرشد نیست و همه خلق اینجا می باید آمد تا ایشانرا ارشاد کنم، شیخ قدس سره فرمود که روزگار ما عجب روزگار است، من پیوسته خبر او پرسیده ام و میکوبد<sup>3</sup> که مریدان را بحلال خوردن میفوماید و بذکر خدای تعالی کردن و باین دو طریق اورا دوست داشته ام و گفته ام بایست که درین زمانه هزار مثل او باشد،

And he gives several further pages of definitely controversial remarks, refuting the Shi'ite extremist beliefs in incarnations,<sup>4</sup> and other similar matters, such as a story of the secret letter, or book (کتاب), bequeathed by the Imams, etc.<sup>5</sup> Sometimes he tries even to reconcile the Shi'ite ideas with the Sufic beliefs, as in the case of Mahdī, the twelfth Imam, who, according to him, was an *Abdāl*.<sup>6</sup>

There is little beyond this in the book which possesses special interest. The passages which may be referred to in this connection are: an account of the Shaykh's dispute with a Buddhist monk at the court of Arghūn<sup>7</sup>; an interesting biography of Ḥusayn b. Mansūr al-Ḥallāj<sup>8</sup>; but quite peculiar is his reference to the great Sufic poet of Persia, Jalālu'd-Dīn Rūmī; 'Alāu'd Daula, like many other strictly Sunnite Sufis, held no very high opinion of the doctrines propounded by the poet, although he paid due tribute to the poetical beauties of his work: 'Some one asked, what sort of person was Mawlānā-i-Rūm. (The Shaykh replied): he was quite good, although in his writings, in spite of all my search, I could not discover signs of decision and authority. But, nevertheless, he was inspired, and I never could hear his poetry without feeling impressed.'<sup>9</sup> (f. 82v):

<sup>1</sup> Not clearly legible.

<sup>2</sup> If omitted, the sentence gives better sense.

<sup>3</sup> Better be read میکوبند.

<sup>4</sup> Cf. ff. 5-6.

<sup>5</sup> Fol. 55.

<sup>6</sup> Fol. 50:

در طبقه ابدال در آمده و همچنین عمر یافت ..... و خدای میداند که او مرده است و اورا در مدینه رسول صلعم دفن کرده اند و شبهه درین نیست،

<sup>7</sup> Fol. 17 sq. 'Alāu'd-Daula calls Buddhism *شاکمونی* indubitably for *شاکمونی* or *Çakya-Muni*.

<sup>8</sup> Fol. 8 sq.

<sup>9</sup> I have already drawn the attention of the reader to this hostility on the part of many pious writers towards the great Jalālu'd-Dīn Rūmī, which Jāmī himself apparently shared (see my previous article). It is peculiar that one of the greatest Sufic shaykhs of India, Muḥammad b.

دیگر پرسیدند که مولانا روم چون کسی بوده، که خوش کسی بوده هرچند که (در) سخنهای او نشان استقامت و تمکین جستیم نیافتم اما خوش وقتی داشته است و من هرگز سخن او نشنوده<sup>1</sup> ام که وقت من خوش نشده است،

As mentioned above, it seems probable that Jāmī could do little with Iqbāl's work beyond basing on it the biography of 'Alāu'd-Daula and a few other saints. He also gives in the *Nafahāt* a highly important document relating to Persian mediaeval Sufism, namely 'Abdu'r-Razzāq Kāshī's criticism of 'Alāu'd-Daula's book *Urwa*, and the latter's reply to it.<sup>2</sup> But the letters (as they are usually called), are not found in the *Iqbālīyya*. Both, in an identical version, appear in the *Latā'if-i-Ashrafī*.<sup>3</sup> This fact however cannot be used for any inferences as to their origin in Jāmī's book because the letters are sometimes given as an independent pamphlet, as in the India Office copy.<sup>4</sup>

In conclusion I have to add that in his preface to the *Nafahāt* Jāmī has included several passages from a Persian translation of Shihābu'd-Dīn 'Umar Suhrawardī's *Awārif-ul-ma'ārif*, as already identified by W. Pertsch.<sup>5</sup> The Persian version in question was prepared by 'Izzu'd-Dīn Maḥmūd b. 'Alī al-Kāshānī (d. 735 A.H. / 1334-1335 A.D.), under the title *Misbāhu'l-hidāyat wa miṣbāhu'l-kīāyat*. The extracts are taken from the first and the third *bābs*.<sup>6</sup>

May, 1924, Calcutta.

Yūsuf Ḥusaynī, surnamed Gīsūdirāz (d. 825 A.D. / 1422 A.H.) was exactly of the same opinion. In one of his letters he calls the works of Rūmī, 'Attār and Ibn 'Arabī nonsense, and themselves the evil doers of Islam (سخنی منخرف ... دین اسلام را زیانکار آمدند), see *Maktūbāt-i-Gīsūdirāz*, MS. of the Asiatic Society of Bengal, E 189, f. 19 (described in the Catalogue under No. 1232).

<sup>1</sup> نشوده.

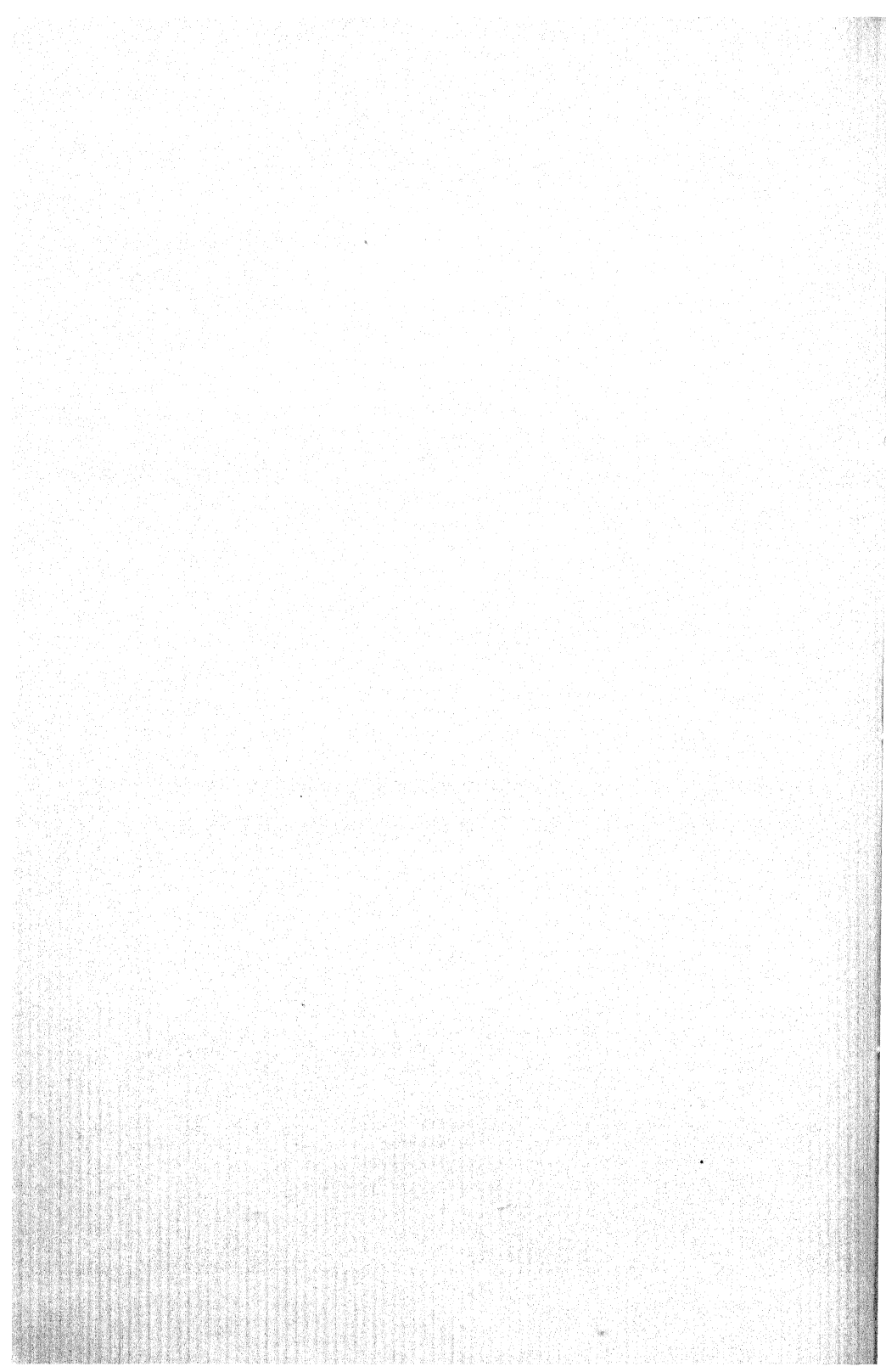
<sup>2</sup> Pp. 558-567. Kamālu'd-Dīn (or Jamālu'd-Dīn) 'Abdu'r-Razzāq Kāshī, the author of many works on Sufism, died in 730 A.H. / 1330 A.D.

<sup>3</sup> Ff. 414-419. Concerning the *Latā'if-i-Ashrafī* see my previous article on Jāmī's authorities, p. 401, and the Catalogue of the As. Society's Persian MSS., No. 1214 (pp. 577-581).

<sup>4</sup> H. Ethé's Catalogue, No. 1835

<sup>5</sup> W. Pertsch, *Die Handschriften Verzeichnisse der K. Bibl. zu Berlin*, vol. IV, Verzeichniss der Persischen Handschriften, 1888, p. 290, cf. H. Ethé, *India Office Catalogue*, No. 1837.

<sup>6</sup> *Nafahāt*, pp. 5, 7, 17-19.



## 24. Imam Ismail.

By W. IVANOW.

Some interesting casual references to Imām Isma'il are found in a little known and rare Shi'ite book, *Ma'rifat akhbār-r-rifāl*,<sup>1</sup> composed some time in the fourth century A.H. (X A.D.) by Abū 'Amr Muhammad b. 'Umar b. 'Abdī'l-'Azīz al-Kashī. Although they add not very much to our knowledge of Isma'il's biography, they deserve attention, firstly, because such references are extremely rare in Muhammadan literature, and, secondly, because they come apparently from early and well-informed sources.<sup>2</sup>

Kashī's<sup>3</sup> book is not mentioned in C. Brockelmann's *Geschichte d. Arabischen Litteratur*, and therefore it may be inferred that no copy of it is known in Europe.<sup>4</sup> But although this work is not common, it is not very rare in the East, and many Shi'ite writers quote it in their compilations. It does not explicitly mention the date of its composition, but must have been compiled some time between 280 A.H./893 A.D. and the beginning of the Vc. A.H./XIc. A.D. The first date is the latest of the dates mentioned in the book itself (p. 372, top). The second may be inferred from the fact that Tūsī, while mentioning it in his List,<sup>5</sup> gives two generations as dividing himself from Kashī.<sup>6</sup> Najjāshī,<sup>7</sup> who

<sup>1</sup> Printed in Bombay, 1317. Concerning this book see Tūsī's List No. 668 (p. 309); also *Kitābū'r-rifāl* by Abū'l-'Abbās Ahmad b. 'Alī b. Ahmad b. al-'Abbās an-Najjāshī, Lith. Bombay, 1317, p. 263.

<sup>2</sup> For a summary of Isma'il's biography see Cl. Huart's article in the *Encyclopædia of Islam*, vol. II, p. 549 (under 'Ismailiyya'). Cf. also W. Ivanow, *Ismailitica*, *Memoirs of the Asiatic Society of Bengal*, vol. VIII (1922), pp. 60-61. In these publications a bibliography is given.

<sup>3</sup> Persian monosyllabic names of cities like Kash, Qum, Bam, etc., are often Arabicised into Kashsh, Qumm, Bamm, etc. It seems more reasonable, however, to leave them as they are in their original language, and therefore I uniformly write Kashī, Qumī, etc.

<sup>4</sup> Apparently the only author who refers to it is I. Friedländer, *The Heterodoxies of the Shiites in the presentation of Ibn Hazm*, *Journal of the American Oriental Society*, 1907, pp. 1-80, and 1908, pp. 1-183. (His statement that 'Kashsh' is in Jurjān, found on p. 4 of J.A.O.S., 1908, is certainly wrong. Kash, the present Shahrīsabz, is a dependency of Samarqand).

<sup>5</sup> Abū Ja'far Muhammad b. al-Hasan at-Tūsī, d. 459 or 460 A.H./1067-1068 A.D., see C. Brockelmann, *Geschichte d. Arab. Litt.*, vol. I, p. 405. His 'List of Shy'ah books' was edited by A. Sprenger, Calcutta, 1853-1855.

<sup>6</sup> See Tūsī's List, p. 309.

<sup>7</sup> According to A. Sprenger (see his Introduction to Tūsī's List, p. 1), Najjāshī died in 450 A.H./1058 A.D. He is not mentioned by C. Brockel-

was followed by Tūsi, calls him a disciple of 'Ayyāshī, who is referred to in the *Fihrist*.<sup>1</sup> This is quite correct, because in the *isnāds* of a great number of traditions collected by Kashī, 'Ayyāshī's name is mentioned as the first link.

Some additional hints as to the date of Kashī's work may be gathered from a comparative analysis of the *isnāds* of Kashī and of the famous Shi'ite writer Ibn Bābūya al-Qumī (d. 381 A.H./991 A.D.),<sup>2</sup> who often mentions the date and place at which he heard this or that tradition. Neither of these authors mentions the other, and they probably never met because Ibn Bābūya worked at Baghdād and Nishāpūr, while Kashī mentions as his *rāwīs* chiefly people whose names indicate their domicile as Soghd, Ferghana, Saghanian and generally the North-Eastern extremity of the Muhammadan world. The *isnāds*, chiefly connected with Imām 'Alī b. Mūsā ar-Ridā (d. 203 A.H./813 A.D.)<sup>3</sup> differ, and rarely ascend to the same associates of the Imām. But the number of their 'links' is approximately the same. Taking into consideration all these indications we may safely conclude that Kashī probably was a contemporary of Ibn Bābūya and lived in, or towards the end of, the 1Vc. A.H./Xc. A.D.

The book deals with traditions concerning the early Shi'ite saints and each of the twelve Imāms. It is remarkable for its wealth of information, liberal spirit, and frequent references to rare works of rather heretical writers. It seems that Kashī himself adopted rather extreme views,<sup>4</sup> and only for the sake of the *taqiyya* used to add a few curses upon the heretics whilst quoting them. This fact adds to the impor-

mann in his book. Tūsi apparently often follows him, but does not give his biography in his list. It is given, however, by al-Ḥasan b. Yūsuf b. 'Alī Ibn al-Mutahhar Ḥillī (d. 726 A.H./1326 A.D.), in his *Naḍḍu'l-idāh* (see Tūsi's list, p. 32, bottom).

<sup>1</sup> His full name was Abū'n-Naḡr Muḥammad b. Mas'ūd al-'Ayyāshī as-Samarqandī, see *Kutāb al-Fihrist*, ed. by G. Flügel, Leipzig, 1871, vol. I, p. 194. He is referred to by Najjāshī, op. cit., pp. 247-250, and in Tūsi's List, No. 690 (pp. 317-320). He was a prolific writer, but of his books probably none is at present to be found in Western libraries, and he is not mentioned by C. Brockelmann in his *Geschichte d. Ar. Lit.*

<sup>2</sup> See concerning him C. Brockelmann, op. cit., vol. I, p. 187. I perused his '*Yūn akhbār-i-Ridā*' (in a MS.; the book has been lith. in Persia); *Kitābu't-tauḥīd*, lith. (Tehran?), 1285 A.H.; *Kitābu'l-amālī*, lith. (Tehran?), 1300 A.H. The latter two are apparently very rare in Europe. The only MS. of the *Kitābu't-tauḥīd* of which I know is preserved in the University library at Petrograd.

<sup>3</sup> In Kashī's book they occupy a rather small place. See pp. 292-312.

<sup>4</sup> Tūsi entirely approves of his beliefs (p. 309: حسن الاعتقاد), but Najjāshī (op. cit., p. 263) tells that he 'narrated from unreliable *rāwīs*' (وروى عن الضعفاء كثيراً), and adds that in his book there are 'numerous errors' (فيه اغلاط كثيرة).

tance of his information concerning Isma'il, because it guarantees to some extent that the narrative is derived from sympathetic, or at least neutral sources, and not from the enemy's camp, as are the majority of accounts of this saint found in Sunni literature.

The anecdotes narrated by Kashī and concerned with Isma'il chiefly deal with the very puzzling and obscure question of the real causes of the revocation of his Imamāt by his father. Unfortunately it is impossible to arrive at a definite conclusion as to their nature. Judging from allusions, some of which are very elusive, these causes were: (1) the personal dislike of Ja'far Ṣādiq for his eldest son, and his preference for his second son, Mūsā Kāzim. (2) Isma'il's popularity amongst the extremist parties, who, in their fanatical zeal threatened to expose the whole of the Shi'ite movement to grave danger.<sup>1</sup> And (3) Isma'il's alleged intrigues against his father.<sup>2</sup>

Only one anecdote is unconnected with these questions, and mentions Isma'il as acting in full accord with his father. It is very important because it gives what may probably be regarded as the only reliable date in Isma'il's biography. The story (pp 239-242) is given in several versions, from different *rāwīs*. It deals with the execution of an eminent follower of Ja'far Ṣādiq, a wealthy Persian ('Irāqī) al-Mu'allī b. Khunays. His execution was carried out under the orders of the governor of Medina, Dā'ūd b. 'Alī. The wrath of Ja'far Ṣādiq was great, and in his collision with the governor he probably proved the stronger party. Dā'ūd could only throw the blame to the shoulders of his subordinate, *ṣāhib-shurta*, i.e. the chief of the police, Sayrāfi<sup>3</sup> by name, who, probably quite correctly, protested his innocence. He was slain in his office by Isma'il, according to one version (p. 240), or executed in some other way, as may be inferred from others.<sup>4</sup>

As Dā'ūd b. 'Alī, according to Ṭabarī,<sup>5</sup> occupied the post

<sup>1</sup> Kashī gives a vivid picture of a large number of heretics whose principal peculiarity was their deification of various Alides, attributing to them most supernatural powers. I will deal with this information in another place. The Alides, on the other part, did their best to dissociate themselves from these far too affectionate admirers. Cf. for an elaborate study of the history of Mukhtār's rising in Kūfa (which is rather typical) Welhausen's *Die religiös-politischen Oppositionsparteien in alten Islam* (Abhandlungen d. Königl. Gesellsch. d. Wissenschaften zu Göttingen, Philos.-hist. Klasse, Neue Folge, Bd. V, 1901, No. 2).

<sup>2</sup> See below, the anecdote given by Kashī on p. 247. Intrigues were probably quite an essential feature of the Alides' politics. Isma'il's son Muḥammad is often charged with this accusation. Cf. *'Umdatul-ta'ālīb*, by Aḥmad b. 'Alī al-Ḥasanī, surn. Ibn 'Inaba (d. 825/1423), lith. Bombay, 1318, p. 208.

<sup>3</sup> Usually this *nisba* is spelled as صيرافي or صيراني (from Sayrāf, an ancient city on the Persian Gulf).

<sup>4</sup> P. 240: فخرج اسمعيل و السيف معه حتى قتله في مجلسه.

<sup>5</sup> Ṭabarī, III, 73. He died in the month of Rabī'u'l-awwal.

of governor of Medina only for three months in 133 A.H./751 A.D., when he died, it is possible to infer that Isma'il: (1) was alive at that date; (2) that he had already attained maturity, and (3) that his lameness, alluded to in his usual surname *al-A'raj*<sup>1</sup> was not so pronounced as to incapacitate him entirely. The date of his death, therefore, could not be earlier than 133 A.H./751 A.D. It is placed exactly in this year by the author of the '*Umdatul-t-tālib*,<sup>2</sup> although some other authorities place it ten years later, in 143 A.H./760 A.D.<sup>3</sup>

The other anecdotes given by Kashī are not lengthy, and it is better to give them here only in translation. As the text has already been printed, there is no need to reprint it here.

No. 1 (p. 206). Jabri'l b. Aḥmad narrates what he has heard from Muḥammad b. 'Isā, who heard it from Yūnus, and he in turn from Ḥammād b. 'Uthmān,<sup>4</sup> who said: I heard Abū 'Abdi'l-lah (i.e. Imām Jā'far Ṣādiq),—peace be upon him!—saying to al-Mufaḍḍal b. 'Umar al-Ju'fī<sup>5</sup>: O Unbeliever, O Idolator! What hast thou to do with my son?—i.e. Isma'il b. Jā'far. And (al-Mufaḍḍal) was a partisan of the latter, sharing the beliefs of the Khattābiyya.<sup>6</sup> But later on he severed his connection with them.

No. 2. (p. 209). Ḥamdūya<sup>7</sup> narrated to me what he had heard from Muḥammad b. 'Isā, who heard it from Ibn Abī 'Umayr, who heard it from Ḥammād b. 'Uthmān, and he in turn from Isma'il b. 'Āmir, who said: I called on Abū 'Abdi'l-lah (i.e. Imām Jā'far Ṣādiq), and invoked a blessing on each of the Imāms. And when I had mentioned his own name, I asked him: Is it Isma'il who will succeed thee?—And he replied: but what if not?

Ḥammād said: I asked Isma'il (b. 'Āmir): What compelled

<sup>1</sup> See Ṭabarī, III, 154, 2509, and '*Umdatul-t-tālib*, p. 208.

<sup>2</sup> P. 208.

<sup>3</sup> See the *Encyclopædia of Islam*, vol. II, p. 549.

<sup>4</sup> An eminent contemporary of Jā'far Ṣādiq and his two successors. He died in 190 A.H./806 A.D., see Ṭūsī's List, No. 252, and Najjāshī, op. cit., p. 104.

<sup>5</sup> He was a notorious heretic of the extremist type, sharing to a great extent the doctrine of the Khattābiyya. He was executed with Ibn Khattāb shortly before 167 A.H./783 A.D. See in Kashī's book pp. 206–211, where chiefly his traditions are narrated. Cf. also Shahra-stānī, ed. Cureton, p. 137; Najjāshī, op. cit., pp. 295–296.

<sup>6</sup> It was a highly important extremist sect, founded by Muḥammad b. Abī Zaynab Maqlās b. Abī'l-Khattāb, who was executed, as mentioned above, before 167 A.H./783 A.D. Kashī devotes to him and his followers considerable attention (approximately pp. 187–233). Information concerning him is summarised by Friedländer, op. cit., J.A.O.S., 1908, p. 112 sq., and a bibliography is given there. It is not useless to mention that the tenets of this sect were largely adopted by the sect of Ismailites. *Ummul-kutāb*, apparently belonging to the Khattābiyya, is still regarded as the most sacred book by the Ismailis of the Upper Oxus.

<sup>7</sup> One of the favourite *rāwīs* of Kashī. He calls him also in some places Ḥamdūya b. Naṣir al-Kashī, but never gives his full name.

thee to inquire as to Isma'il's succession (to Ja'far Ṣādiq) ?—He replied : al-Mufaddal b. 'Umar had ordered me to do so.

No. 3 (p. 223). Verily Fayḍ (b. Zubayn) <sup>1</sup> was the first man to hear from Abū 'Abdī'l-lah (i.e. Ja'far Ṣādiq) of his appointment of his son Mūsā to be Imām after himself.

Ja'far b. Ahmad b. Ayyūb narrates what he heard from Ahmad b. al-Hasan at-Taymī and also from Abū Nujayḥ, and he in turn from al-Fayḍ b. al-Mukhtār who said :

Said I to Abū 'Abdī'l-lah : O thou, for whose sake may I be sacrificed ! What dost thou declare concerning the land which I have received from the government ? Should I lease it to others and myself accept of whatsoever God will cause it to yield, either one half, or one third, or perchance either less than this, or more ? <sup>2</sup>—He replied : There will be no harm.

But his son Isma'il said to him : O Father, why should he retain it ?—(Imam Ja'far) replied : Son, is not this the way in which I act with my peasants ? Really the greater part of what I say I am constrained thus to say. But thou dost not act in this way. <sup>3</sup>

Isma'il rose and walked away. I asked : what prompts Isma'il not to follow thee although thou hast handed over to him every thing after thee, in the same way that they were transferred to thee after thy father ?

(Ja'far Ṣādiq) replied : O Fayḍ, really Isma'il is not in the same position as I was with my father.

Said I : But we have no doubt [p. 227] that (all) men have accepted him as thy successor.—And I further said to him on this point.—But if what we fear should happen, and God calls thee at last, <sup>4</sup> to whom (wilt thou bequeath the Imamāt) ?

Said he : Leave me alone !—But I kissed his knees, and said to him : Have mercy upon me, O Lord ; verily (thy anger) is like fire. Really if I expected <sup>5</sup> to die before thee, then, by God, why should I worry ; but I am afraid that I will survive thee.

<sup>1</sup> It is not clear if this name is merely a mistake, because a few lines above, and below Kashī speaks of Fayḍ b. al-Mukhtār. Concerning the latter, cf. Tūsi's List, No. 564, and Najjāshī, op. cit., p. 220.

<sup>2</sup> These terms of the leasing of land are still much the same in Persia. The different shares of the landlord mentioned here apparently relate to different crops. Nowadays the share of a cultivator is the larger the more difficult is the cultivation.

<sup>3</sup> The laconism of this passage makes it rather difficult to realise precisely what is really alluded to, and the text seems to be not quite reliable here. Perhaps instead of *فلا نفعل* it would be better to read *فلا نفعل* = 'and thou dost not realise this.'

<sup>4</sup> I read *العاقبة* instead of *العاقبة* which obviously is a mistake.

<sup>5</sup> Again a suspicious expression. Perhaps this *لو طمعت* is nothing but an incorrect reproduction of the original *لو طمئنت* which gives much better sense : 'if I would be made sure.'

He said : Sit quietly. Then he rose and went towards the curtain in his house, lifted it, and passed into the room. He remained there a while, and then cried : O Fayḍ, come in ! I entered, and found him in a mosque engaged in prayer. Then he turned from the *qibla*, and I sat before him. Entered Abū'l-Hasan (i.e. Mūsā b. Ja'far), who was at that time a little boy, holding a whip in his hand. (Ja'far) made him sit in his lap and asked : With my father mayest thou be ransomed and with my mother ! Why is this whip in thy hand ?—(Mūsā) replied : I passed near 'Alī, my brother, who was holding it and hitting animals : so I pulled it away from his hand.

Abū 'Abdu'l-lah said : O Fayḍ, verily the books of Abraham and Moses were handed over to the Apostle of God, and he entrusted them to Hasan and Husayn ; the latter entrusted them to 'Alī b. al-Husayn, who did the same to Muḥammad b. 'Alī, and my father entrusted them to me, and they were with me. But I entrust them to this my son, regardless of his young age, and they are with him.

I understood what he meant by this, but asked : Explain this to me further.

(Ja'far Ṣādiq then tells him of several instances of Mūsā's filial affection for him, and his own appreciation. Then he orders Fayḍ b. Zubyān not to tell anybody of what he has heard, except his relatives and friends. Thus the latter did, and all his connections obeyed the Imām's will.)

No. 4 (p. 247). Aḥmad b. Mansūr narrated what he heard from Aḥmad b. al-Faḍl al-Khuzā'i,<sup>1</sup> and he from Muḥammad b. Ziyād, and he in turn from 'Alī b. 'Aṭiyya, the chamberlain,<sup>2</sup> who said : 'Abdu'r-Raḥmān b. Siyāba wrote to Abū 'Abdi'l-lah (Ja'far Ṣādiq) : I have warned thee that Isma'il is going to ruin thee. He is affectionate in appearance, but stirs trustworthy people up to the point of (open) revolt.

Abū 'Abdi'l-lah wrote to him in reply : True is the word of God : no burdened soul shall bear the burden of another.<sup>3</sup> By God, I did not know about this, never ordered this, and never will agree to this.

It is not clear, however, if the 'Isma'il' here really was the son of Imām Ja'far, and not a different person of the same name. Unfortunately there are no ways to ascertain this definitely.

*May, 1924, Calcutta.*

<sup>1</sup> See Najjāshī, op. cit., p. 65, who ascribes to him the authorship of كتاب الزوار.

<sup>2</sup> Here صاحب الطعام. Cf. Tūsi's List, No. 485.

<sup>3</sup> Qur'ān, XXXIX, 9.

## 25. The Conception of the Indian Astronomers concerning the Precession of the Equinoxes.

By JYOTIS CHANDRA GHATAK.

An astronomer (who is also an astrologer) of no mean reputation in the West has written in the revised and enlarged edition of one of his works thus: "The precession of the equinoxes is taken in *India* at 50" per year." As a matter of fact, in no Indian astronomical treatise of any fame whatever do we find the annual measure of precession as 50 seconds. There are existent in India two schools only—one counting 54" and the other 60 seconds as the annual libration. And if we take into account 'Siddhânta-Darpana,' a twentieth century astronomical treatise of India from the pen of Mahamahôpâdhaya Chandrasekhar Simha, of Orissa, we may recognise a third school which gives 57·615 seconds as the annual librational rate. I shall discuss here very briefly the views of the various Indian astronomers beginning from a very remote period of history up to the very present times, from a historical standpoint.

But before doing so, I propose to emphasise at the very outset, the initial difference between the Indian and the Western conception as regards the precession of Equinoxes. According to the Western astronomers, the equinoctial points move along the ecliptic *steadily retrograde* at a mean rate of 50·2" per annum caused by the action of the sun, moon and planets upon the protuberant matter about the earth's equator in connexion with its diurnal rotation. It happens in the following manner. The pole of the earth is constantly changing its position and as the earth's axis changes, the plane of the equator also changes with it. Thus, each succeeding Vernal (or Autumnal) equinox happens a little earlier than it otherwise would have done; and as it is thus *preceding* the point which it would have occupied without this motion, steadily and continually with reference to the time of transit motion, it is called the *precession of equinoxes*. But the Indian astronomers, beginning from those who hail from the hoary antiquity up to those who flourished even in the nineteenth century of the Christian era, all agree in believing that this motion of the equinoxes, is not always retrogressive but that it is also progressive as soon as 27 degrees have been reached on either side of the first point of Aries or Libra. This oscillation of the equinoctial points (for which the term '*Libration*' might be very appropriately used) with an amplitude of 27 degrees

(or 30 degrees as according to some) will thus be found to be the outstanding speciality of the Hindu conception. Some scholars suspect Ganeśa Śatānada and even Bhāskara as not being believers in the Libration theory; since they have given instructions for adding the precession degrees (or minutes or seconds) to the *Nirayana* longitude of planets. But, this is at best but a guess; since, at least two of these three authors are professed followers of the *Sūryya-Siddhānta*—the great upholder of the Libration theory—and also because *argumentum ex silentio* is not a very sound principle to be followed everywhere, as it proves very little although it promises much. Even Pandit Chandraśekhara follows this method of argument and suspects Bhāskarāchāryya to be a revolution theorist. But he himself does not believe in the revolution theory. He assigns two reasons for his being a believer in the Libration theory: (1) since Brahma and Saura Siddhāntas are Libration theorists and (2) since his own reasoning is in favour of the Libration theory. (Cf. तद्यपि ब्रह्मसौरोक्तयुक्तेष्वत्र न्योदितम्। प्राक् प्रत्यक् चलनं . . . Ch. 6, v. 101.)

So far by way of enunciating the radical difference between the Indian and the Western conceptions and thus giving a sort of resumé of the whole paper. Now, we would begin with one of our hoariest documents—viz. *Sūryya-Siddhānta*.

1. *Sūryya-Siddhānta*:—This is avowedly a very ancient and authentic work on Indian Astronomy. It puts the libration rate thus:—

चिंशत्कृत्वो युगे भानां चक्रं प्राक् परिलम्बते ।

तद्गुणाद् भूदिनैर्भक्ताद् द्युगणाद् यदवाप्यते ॥

तदोस्त्रिन्ना दशमांशाः विज्ञेया अयनाभिधाः ।

(Ch. 3, verses 9 and 10).

According to this work, therefore, the equinoctial points move along ecliptic, so as to reach the farthest point eastward from the first points of Aries and Libra respectively, 600 times in a 'Mahā-yuga,' i.e. 43,20,000 years. This motion is both eastward and westward (i.e. both forward and backward) as is implied by the verses.

The commentator Raṅganātha clearly says:—

“इत्यरेच्छया क्रान्तिवृत्तं स्वमार्गे पश्चिमतः सप्तविंशत्यंशैः क्रमोपचितैश्चलितं ततः परावृत्य स्वस्थान आगत्य तत्स्थानात् पूर्वतः सप्तविंशत्यंशैश्चलितम् ।”

i.e., Through Divine will the plane of the equator proceed-  
ing westward on its own path 27 degrees along the ecliptic  
by gradual gliding movement again recedes and reaches the

original equinoctial points (i.e. 1st degrees of Aries and Libra) and then again proceeds 27 degrees eastward.

Thus we see that in one Mahā-yuga by progressive and retrogressive movements ( $600 \times 4$ ) or 2,400 full circuits of equinoctial difference take place. Thus dividing 43,20,000 years by 2,400, we get one full circuit of equinoctial aberration taking place in 1,800 years. So that the equinoctial points would take 66 years 8 months to travel one degree in this way. The formula, which the author of Sūryya-Siddhānta gives us, being fully worked out, lands us to the same result. The formula is this :—

To find out the libration of equinoxes for a particular day, the total number of Aharganas of the day in question, is to be multiplied by 600 and divided by Bhū-dina (i.e. total number of mean solar days in a Mahā-yuga). From the result of this division, the 'Dōḥ' or 'Bhuja' is to be ascertained, and that Bhuja is to be multiplied by 3 and divided by 10 and thus would be obtained the exact number of degrees, minutes and seconds of the precession.

The number of 'Bhū-dina' or 'Kvaha' in a Mahā-yuga, is fixed and is given by the author as 157, 79, 17, 828.

Cf. “वसु-द्युष्टात्रि-रूपाङ्क-सप्तत्रि-तिथयो युगे ।”

Ch. 1, Sl. 37.

also, “भवन्ति भोदया भानु-भगणैरुनिता क्वाहाः”

Ch. 1, Sl. 39.

Now let us turn to another very old astronomical treatise.

2. *Sōma-Siddhānta* :—

It gives :—

“युगे च षट्शततृत्वारो भ-चक्रं प्राक् च लम्बते ।

तदुण्यो भूदिनैर्भक्तो द्युगणोऽयनखेचरः ॥

तच्छुद्धचक्र-दोर्लिप्ता दिशत्याप्तयनांशकाः ।”

(Spastādhikāra Chapter, verses 31 and 32.)

Here also we get the same measure of libration as we get in Sūryya-Siddhānta. The process of finding it out, is also the same, the only difference being that the Bhuja degrees are to be done into 'Liptā's or minutes and then divided by 200. The result is the same in both the cases because to multiply a thing by 60 and then divide by 200, is the same as to multiply it by 3 and then divide it by 10. Thus we see that according to Sōma-Siddhānta also the annual libration is 54 seconds. I would now turn to another old astronomical treatise.

3. *Vasiṣṭha-Siddhānta* :—

It gives :—

“ अब्दाः खखर्तुभिः (६००) भाज्या-

स्तदो-स्त्रिंश दशोद्धताः ।

अयनांशाः .....” Sl. 55.

(Sphuṭa-gati Chapter, verse 55.)

Here also we get the same method of finding out the libration and the same annual measure of it, viz., 54 seconds.

All these three astronomical treatises hail from a very remote antiquity and the determination of the respective priority of the one to the other is rather difficult although not an altogether hopeless task. The author of ‘Sambhu-Horā-Prakāśa’ expressly says :—

“ आद्यः सिद्धान्तः स्मृतः सोमसंज्ञो यो वै दुर्गा शम्भुना सम्यगुक्तः ।

अन्यो धात्रा निर्मितो ब्रह्मसंज्ञः सूर्य्योक्तः सौरसंज्ञस्तृतीयः ॥ ६

वशिष्ठाख्यो पौलिशो लोमशश्च पाराशर्य्यः सांप्रताचार्य्यसंज्ञः ।

प्रोक्ता सिद्धान्तास्त्वमौ सप्तसंख्या व्यक्त्यक्तैः भूरि-भदैः समेताः ॥ ” ७

(Ch. 1, verses 6 and 7).

The dialogue between Sūryya and Aruṇa assigns the oldest position to Brahma-Siddhānta, Vasiṣṭha-Siddhānta coming next, and Sūryya-Siddhānta being put third. So that both of these traditions place Sūryya-Siddhānta as the third in chronology. Not only tradition but internal evidence as well would betray that Sūryya-Siddhānta was at least posterior to Sōma. This would be apparent from a comparison of Paridhi-degrees assigned to the planets in the two books. The Sōma has only Sighra and Manda Paridhi degrees, while the Sūryya has odd and even division for each of these Sighra and Manda Paridhis. This is undoubtedly an instance of how the Sūryya-Siddhānta must have improved upon its predecessor the Sōma. Hence the dispute now remains between ‘Sōma’ and ‘Brahma.’ In my opinion, the tradition recorded in Sāmbhu-Horā-Prakāśa seems to be nearest truth. I give here only a few salient points on behalf of this view : (1) The style of ‘Sōma’ seems to be more archaic than Brahma. (2) The language of ‘Sōma’ is manifestly simpler than Brahma. (3) Purely non-astronomical matter (e.g. metaphysical and cosmogonical discussion) has been dwelt upon at length in Sōma (cf. Golādhyāya, Ch. 10, verses 1 to 24 and again 67 to 80), while Brahma is extremely matter-of-fact in tone and narration. (4) If Sūryya-Siddhānta is to improve upon or follow any of his predecessors, it is most

likely that it should do so with regard to the oldest of them either from the view-point of avoiding the detection of similar passages or from the stand point of extorting greater reverence and admiration. There are thus to be found innumerable passages in *Sūryya-Siddhānta* which cool deliberation would show to be only the improved editions of certain *Sōma* passages, e.g.

(i) *Sōma* :—

‘तत्त्वनेत्राणि गोऽव्यभिक्त्वा रूपनगर्त्तवः ।’

(*Spaṣṭādhikāra* Ch, verse 4).

*Sūryya* :—

‘तत्त्वाश्रितोऽङ्गाभिक्रता रूपभूमिधरर्त्तवः ।’

(Ch. 2, 17).

(ii) *Sōma* :—

खाङ्गाद्यौ वागश्रुत्येष्टाः शरच्चन्द्रगुणेन्दवः ।

(*Spaṣṭa* Ch, verse 4)

*Sūryya* :—

खाङ्गाद्यौ पञ्चश्रुत्येष्टाः वागरूपगुणेन्दवः ।

(Ch. 2, 17.).

(iii) *Sōma* :—

रवेर्मन्दपरिध्यंष्टाः मनवो यमलाग्रयः ।

(*Spaṣṭa* Ch. verse 15).

*Sūryya* :—

रवेर्मन्दपरिध्यंष्टाः मनवः श्रौतगोरदाः ।

(Ch. 2, verse 34).

(iv) *Sōma* :—

अर्थाद्वयो वेदगुणाः सुराः सूर्याः नवार्णवाः ।

(*Spaṣṭa* Ch. verse 16).

*Sūryya* :—

युग्मान्ते ऽर्थाद्वयः खाद्यौ सुराः सूर्या नवार्णवाः ।

(Ch. 2, verse 35). etc.

Had *Sōma-Siddhānta* been *Sūryya*'s immediate predecessor, the latter would not have borrowed expressions almost verbatim from the former. Now to turn to rather later works.

4. *Bṛihat-Saṃhitā* (Varāha-Mihira) (< 427 Śaka or < 505 A.D.).

In the days of Varāha-Mihira, the vernal and autumnal equinoxes took place on the last days of Chaitra and Āśvin respectively. So that the 'Krānti' (Declination) was then zero. Thus he says :—

“साम्प्रतमयनं सवितुः कर्कटकाद्यं मृगादितश्चान्यत् ।

उक्ताभावो विक्रतिः प्रत्यक्ष-परीक्षणे र्यक्तिः॥”

(Ch. 3, verse 2).

If we compute from Varāḥa Mihira's days when precession was zero, up to the present time (say 1922, 14th April, i.e. 1844 Śaka, 1st Baisākha) when the actual precession is  $22^{\circ} 38' 10''$  we find that the annual libration has been something like  $57\frac{1}{2}$  seconds.

5. *Laghū-mānasa* (By Muñjāla) (<854 Śaka or <932 A.D.).

This work was written by Muñjāla somewhere about 854 Śaka (Cf:—

“कृतेखिभमिते प्राक्के मध्याह्ने रविवासरे ।” etc.

He says that the libration was zero in Śaka 434 or 512 A.D. Now, if we compute from his time up to the present day we get an average annual libration of  $57\frac{1}{2}$  seconds.

6. *Jyotiṛvidābharaṇam* :—(Kālidāsa) (<1,000 A.D.).

The author of this book is Kālidāsa who was certainly not anterior to 445 Śaka or 523 A.D. According to him libration was zero in 445 Śaka or 523 A.D. He gives an average annual libration of 60 seconds (= one kalā) I quote him below :—

प्रकः प्रारम्भोधि-युगोनितो हृतो

मानं खतकः अयनांशकाः स्मृताः ।

(Ch. 1, verse 18).

7. *Adbhuta-Sāgara* (Ballāla-Sena) (1089 Śaka or 1167 A.D.).

This book professes to be a Saṁhitā and is written after the model of Bṛihat-Saṁhitā. The author whether he be Vallāla Sena or anyone else, was not himself a great astronomer. He was more of a Nibandha-kāra type of writer than a real astronomer, and indeed his work is a veritable register of quotations from previous authorities. Nevertheless, it cannot be gainsaid that we have got to learn a good deal from this author as well. He says that in his time the Dakṣiṇāyana began when the sun reached the first portion of Punarvasu and that the Uttarāyana began when the sun reached the first point of Uttarāshādā.

The first parts of Punarvasu and Uttarāshādā mean the 21st degree of Gemini and the 27th degree of Sagittarius respectively according to the equal-space system of Nakṣatra division. This is an apparent anomaly; while according to the unequal-space system of Garga and Brahma-Siddhānta respectively they would mean the 14th or 13th degree of Gemini and 21st or 17th degree of Sagittarius. This again is

discordant as we don't get a difference of 180 degrees by it. Thus it is quite clear that either the author made a confusion of the two systems or, which is more probable, that in his days there obtained a system of Nakshatra division which was a compromise between the equal-space and the unequal-space systems. If we follow the equal space-system in reckoning the first part of Punarvasu it becomes the 21st degree of Gemini, while the unequal space system of Garga being followed with regard to the reckoning of the first part of Uttarāshādhā it comes to the 21st degree of sagittarius; so that we get a difference of exactly 180 degrees. Now, to libration. In this way we find out that in the author's time and according to his own version, the libration was 10 degrees. Now reckoning from Varāhamihira's approximate time of 505 A.D. up to the year of the composition of Adbhutasāgara (1167 A.D.) we get a libration of 600 minutes for 662 years, i.e. roughly  $54\frac{2}{3}$  seconds per year.

8. *Karaṇa-kutūhalam* (Bhāskarācharyya) (1105 Śaka. or 1183 A.D.)

Bhāskara must have written his work either in 1105 Śaka or a few years after it. This is apparent from the fact that he uses 1105 Śaka as his Karaṇa year. (Cf.

“शक्रः पञ्चदिक् चन्द्रहौनोऽर्कनिर्गः”

(Ch. 1, verse 2).

According to this author also the average annual libration is 60 seconds per year.

Cf.

“अथायनांशाः करणाब्दलिप्ता

युक्ता भवास्तद्युतमध्यमानोः ॥”

(Ch. 2, verse 17).

Bhāskara says that in his days the precession was already 11 degrees; hence ‘युक्ता भवाः.’ The Commentator Sumati Harsha further informs us that in Bhāskara's time the actual precession was 11 degrees and 24 seconds but that the author took the integral number avoiding fraction. Thus:—

“विशेषश्चात्र यथाब्दादायनांशाः (११° 10' २४") ग्रह्यकृताचतुर्विंशतिविकलान् विहाय अंशा एव भवा एकादशमिता गृहीताः ।”  
(loc. cit).

If we, on our own account, make a computation from the approximate time of Varāha's writing the Brihat-Samhitā when precession was zero and also Bhāskara's time when the precession amounted to 11 degrees, we get an average

precession of  $\left(\frac{660}{(1183-595)}\right)$  or  $\frac{660}{678}$  minutes or roughly  $58\frac{1}{2}$  seconds.

The Commentator Sumati Harsha further tells us how there were only two Schools existent; the one counting 60 seconds and the other 54 seconds as the average annual libration. Thus :—

“एषां अयनांशानां प्रतिवर्षे एकैककलास्त्राधिका उत्पद्यन्ते तत्पक्षे  
परमायनांशाः त्रिंशदंशा (३०) भवन्ति । यत्पक्षे प्रतिवर्षे चतुःपञ्चाशद्  
विकला (५४) उत्पद्यन्ते तत्पक्षे सप्तविंशत्यंशाः (२७) परमायनांशा  
उत्पद्यन्ते” etc.

9. *Graha-lāghava* :—(Gaṇeśa Daivajña) (1442 Śaka or 1520 A.D.).

This author clearly states that there happens a libration of 60 seconds every year. According to him the libration was zero in 444 Śaka, i.e. 522 A.D.

“अथ वेदाङ्गग्रहानः ख-रसहृतः शक्रोऽयनांशाः ।”

(Ch. 2, verse 7).

In the section on Aharganānāyana the author has ‘द्व्यब्धौ न्द्रो-  
नितशक ईशहृत्’ etc. which at once reveals that his work was  
written about 1442 Ś. or 1520 A.D.

The Commentator Viśvanātha Daivajña (son of Divākara Daivajña) who wrote his Udāhṛiti commentary on *Graha-lāghava* in 1534 Śaka or 1612 A.D. says in his note on this 7th verse that there were only two schools existent—one counting 54 seconds and the other 60 seconds as the average annual libration. Thus :—

“अतः ख-रसहृदिति चत्वारिंशदधिक चतुर्दश-शत-वर्षैः परमायन-  
चलनस्य व्यावृत्तिर्भवति तत्र यस्मिन् पक्षे कलोपचय स्तस्मिन् पक्षे  
चतुःविंशत्यंशाः परमायनचलनांशाः, यस्मिन् पक्षे चतुःपञ्चाशद्-  
(५४)विकला उपचीयन्ते तत्पक्षे सप्तविंशत्यंशाः’ (२७) परमा  
उत्पद्यन्ते ।” etc.

10. *Jātakārnava* :—(By Varāhamihira the third) (1450 Śaka-or 1528 A.D.).

The author of this work is known as Varāhamihira. He is the second astronomer Varāhamihira of India, if the author of *Bṛihat Saṁhitā* is counted as the first. But sometimes the celebrated Varāhamihira of the sixth century is reckoned as the second; in that case, of course, this Varāhamihira would

be the third astronomer of the name. That this Varāha flourished in the first half of the sixteenth century would be manifest from his 21st (23rd of other editions) verse of the 1st chapter, where he enjoins upon deducting 1450 from the Śaka era.

“शकाब्दीनात् खगोन्मैर्निजपूरितात्  
नियोजयेत् खमन्दोच्चे द्वि-लक्षाप्तकलादिकम् ॥”

He was, in all probability, a Bengali living in the Rādhā country (roughly answering our present Burdwan division) as can be well inferred from his following verses on Desāntarā-nayana.

“खेयभू (१५०) योजनमितं राठे देशान्तरं मया  
सम्पाद्य चन्द्र ग्रहणं भूयो भूयो निरूपितम् । १६  
तन्मानेन कला राठे ग्रहेभ्यः परिशोधयेत् । २० ”

According to this author the average annual libration is 54 seconds. His formula for finding out the libration of a particular year is this :—

“शाकमेकाद्विंशेदोनं द्विः कृत्वा दशभिर्हरेत् ।  
लब्धेन हीनं तत्रैव अयनांशकलाः स्मृताः ॥” ११

(Tri-praśnādhikāra Chapter, verse 11).

i.e. from the Śaka year under consideration 421 is to be deducted. Then the residue is to be put down in two places. One of them is to be divided by 10, and the quotient is to be deducted from the other number. The result obtained would be the amount of precession (or recession) minutes for the year.

11. *Siddhānta-rahasya* :—(Rāghavānanda) (1513 Śaka or 1591 A.D.).

According to this work also the annual rate is 54 seconds. The verse giving the formula for finding out the precession (or recession) of a particular year is nearly the same as in *Jātakārṇava*.

‘शाकमेकाद्विंशेदोनं द्विः कृत्वा दशभिर्हरेत् ।  
लब्धं हीनञ्च तत्रैव अयनांशकलाः ॥’

12. *Siddhānta-Darpana* :—(By M. M. Chandrasekhara Simha of Orissa)

The author of this work Mahāmahōpādhyāya Chandra-śekhara Simha of Orissa, was a born astronomer of great genius of the latter half of the nineteenth century, who lived into the twentieth.

According to him, the annual librational rate is 57.615”.

Cf. “प्रतिलोमगतेः कल्पे क्रान्तिपातस्य पर्ययाः ।  
 दृक्समाः कल्पिताः खाद्रिचन्द्राभ्याम्बुधिषण्मिताः ॥  
 भचक्रं सग्रहं सोचं सपातं सकलार्द्धगः ।  
 प्राक् पश्चात् प्रेरयत्येष क्रान्तिमार्गानुसारतः ॥  
 सप्तविंशतिभागान्तं प्राचीं मेघादि षड् भाक्  
 प्रतीचीं प्रति तौल्यादिभार्द्धगः प्रक्षिपत्ययम् ॥”

(Chapter 6, verses 75-77).

From a consideration of all these Siddhāntas we find that the slow annual motion of the equinoctial points along the ecliptic, is reckoned at 54, 57, 615 and 60 seconds by Indian astronomers, and that the movement is not always retrogressive but that it is also progressive as soon as the farthest limit of 27 degrees (or 30 degrees according to some) is reached either way. A great Indian astronomer has stated this fact very nicely thus :—

“मेघसंक्रमतः पूर्वं पश्चात्तारा (२७) दिनान्तरे ।  
 प्रतिलोम्यानुलोम्येन विषुवारम्भणं भवेत् ॥  
 विषुवारम्भणं यत्र समं मानं दिवानिष्टोः ॥”

Thus the 3rd of Chaitra is the farthest limit of retrogression and the 27th of Baisākha, the farthest limit of progression. Thus after some 300 or 350 years from now, the equinoctial points would be approaching Aries again and thus receding in movement. Thus we see that according to the Indian astronomers the phrase ‘precession of equinoxes’ is a misnomer, the recession of equinoxes also being an equally well-founded phenomenon. As a matter of fact we have actually a faint echo of such a thing from Varāhamihira’s, *Bṛihat Saṁhitā*:—

“आश्लेषार्धाद् दक्षिणमुत्तरमयनं रवेर्धनिष्ठाद्यम् ।  
 नूनं कदाचिदासीत् येनोक्तं पूर्वशास्त्रेषु ॥”

(Ch. 3, verse 1).

which shows that in such days the vernal equinox took place on the 24th of Baisakh.

In *Kāśyapa-Saṁhitā* also we hear of an identical fact.

“सार्पार्धाद्-दक्षिणं भानोः अविष्टाद्यं तथोत्तरम् ।  
 कदाचिदासीदयनम्...”

In *Pāraśara-Saṃhitā* we have also an identical record :—

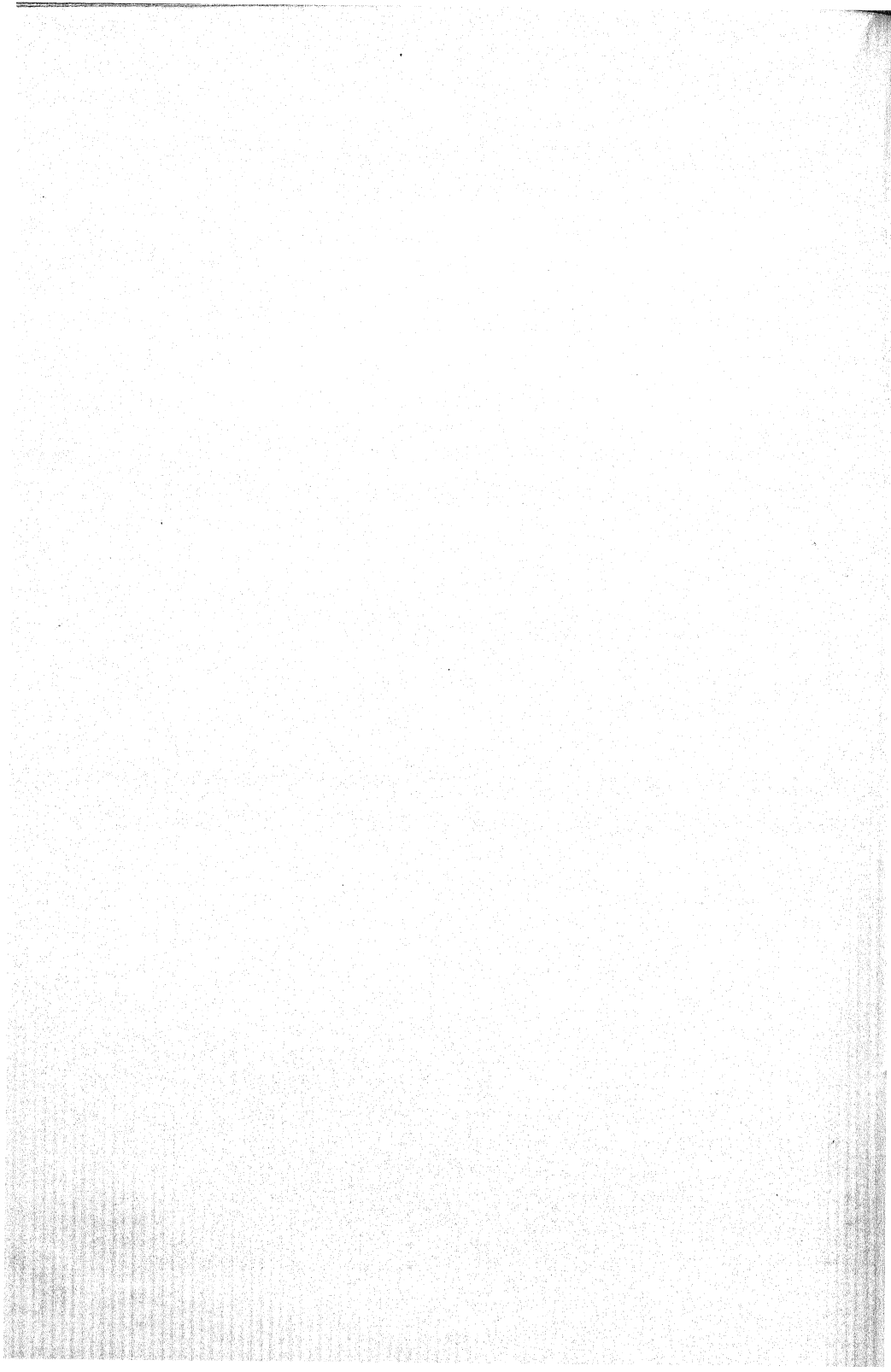
“तस्य अविष्टाद्यात् पौष्णान्तं चरतः शिशिरः ।”

and also, “प्रावृत् सर्पाधीत्यस्तान्तम् ।”

( अङ्कत-सागर-वृत्त-पराशर-वचनम् )

Indeed we nowhere hear of a Dakṣiṇāyana beginning with 'Maghā' which could have at once established that the limit of precession is not actually  $27^\circ$  or at best  $30^\circ$  (as according to some school, a faint trace of which is preserved in the tradition referred to by Sumatiharsha in his commentary on *Karana-Kutūhala*).

I shall now conclude my paper with a word about the zero-libration year. As I have already noticed such a year was either 420 or 421 or 434 or 444 or 445 Śaka era i.e. either 498 or 499 or 512 or 522 or 523 A.D. according to the different authorities. In my estimate, such a year was very probably 499 A.D. since it answers Kaliyuga 3,600, which is  $(1,800 \times 2)$  i.e. the farthest limit of  $27^\circ$  being reached and again traced back quite in accordance with the sayings of the ancient *Siddhāntas* and also because it is exactly the 120th part of the Kaliyuga period and precisely the 1200th part of a Chatur-yuga or Mahā-yuga period.



26. Daudig Copper Plate Inscription of Kāsāsati,  
Śakābda, 1725 (A.D. 1803).

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PRELIMINARY.

While collecting materials for the construction of a history of the Jaintiaraj I came across this copper plate in a rather out-of-the-way place called Daudig (Dauyādig according to the inscription), about twenty-four miles from the headquarters station of Sylhet and within the jurisdiction of the Jaintiapur Police Station. The plate is in the possession of the Sebāits (worshippers) of the gods to whom the grant is made. This inscription is for the first time brought to notice and edited by me.

The plate measures 6" × 4" and is connected to a hook with two chains evidently for the purpose of suspension. The royal seal is engraved just in the middle of the upper margin and represents a jumping lion within three circles placed side by side. The circle in the middle is made of dots. The lion has its face turned to the left, having in front a semi-circle of dots. The seal is almost the same as is engraved in the Dhupi Copper Plate Inscription of Rāmasimha II (see J. and P. A.S.B., Vol. XVIII, 1922, No. 1, p. 73), with this difference however, that the bunch of water lilies is absent in this plate. The plate has suffered a little damage immediately above the right hand portion of the third line.

The inscription consists of 17 lines, excluding the invocatory line above the royal seal, two letters carved immediately above the first line about its end, and two other lines written on the right side of the upper margin and at right angles to the main body of the inscription. The letters above the first line are न and इ which imply that the former should be placed in line 3 (after सु).

The characters are modern Bengali with slight peculiarities evidently due to the inscriber's bad hand in writing. The characters are not generally well-shaped and the inscriber is open to the charge of carelessness, e.g. he has left out न after सु in line 3 and has transposed इ and the left curve of ओ in (बड़गोसायि) (line 2). He also appears to have made some omissions in lines 14-15.

The language of the inscription is Sanskrit but lines 7-11 are a mixture of Bengali and Sanskrit, the first three lines

and part of the fourth forming two stanzas of Upajāti. But the prosody is not accurate. The first stanza seems to consist of three verses (pāda) of Indravajrā and one verse (the third) of Indravamśyā. The second and third quarters are not however regular. In the second stanza the third verse appears to be in irregular Vamśasthavila, the fourth in Indravajrā and the rest in irregular Indravajrā verses. There are



also other grammatical errors. Orthographical mistakes such as वुधर for भूधर, चष्टि for यष्टि are due to dialectic provincialism. Syntactical errors are also common, e.g. प्रहृष्टि or प्रहृष्टे in line 2, the fifth case-ending for the third (line 5), the second case ending for the sixth (line, 11), neuter gender for feminine (line 14), etc. Instances of wrong euphonic combinations (sandhi) are to be found in lines, 7 and 12.

The inscription records a grant of land by Mahādevī (queen-dowager) Kāsāsati, wife of king Baḍagosāyī of Jaintia-pur, to the gods Śiva, Jagannātha, and Vāsudeva-bhūdhara of the village Dauyādig, on the 22nd kṛtika, Śakābda, 1725 (1803 A.D.). The grant is made with the consent of the reigning king Rāmasiṃha II, the third in succession from Baḍagosāyī. Now, Baḍagosāyī reigned from 1731 to 1770 A.D. and Rāmasiṃha II from 1790 to 1832 A.D. (J.A.S.B. 1895, vol. lxiv, page 242: Gait's History of Assam, pp. 260-261). Queen Kāsāsati thus appears to have enjoyed a very long life. This pious queen made immense grant of land for religious purposes as the following inscriptions prove:

1. Copper Plate Inscription dated Śakābdā 1710. This grant records another grant of land made in 1725 (Śakābada). It has been briefly noticed by Sir E. Gait in his "Report on the Progress of Historical Research in Assam," page 16; and will be shortly edited and published by me.

2. Copper Plate Inscription dated Śakābda 1727, noticed by Gait (loc. cit.)

3. The Plate under review, Śakābdā, 1725.

4. Copper Plate Inscription dated Śakābdā 1735 noticed by Gait (loc. cit.) This plate is noteworthy in this connection. Says Gait: "This is another grant by the same lady with the consent of Rājā Rāmasiṃha of some land for the worship of the idols, Vāsudeva Jagannātha and Bhūdhara." If च्च in line 1 of our inscription be taken to mean 3 then the date of the two inscriptions is the same, but the two plates are not identical since our plate refers to Śiva, Jagannātha and Vāsudeva-Bhūdhara, whereas Gait's to Vāsudeva, Jagannātha and Bhūdhara.

#### TEXT.

ॐ<sup>1</sup> नम<sup>2</sup> शिवाय ।

त३<sup>5</sup>

श्रीमती<sup>3</sup> काशासती  
महर्देयाः ।

1. \* शाकेषु चक्षुर्मुनि चन्द्रसंख्ये दत्तावधूतेश्वर शुभ्रप्रौढे श्रीवासु-  
देवस्य च

<sup>1</sup> Expressed in symbol.

<sup>2</sup> Read नमः.

<sup>3</sup> The upper curves of तौ have been left out.

<sup>4</sup> The preceding symbol probably implies श्रीम्.

<sup>5</sup> "त" is to be inserted after सु in line 3.

2. <sup>1</sup> बुधरमूर्तेः श्रीरामसिंहन्दपतौ प्रहृष्टा <sup>2</sup> । भूमिर्वडे गासायि-  
न्दपवर्जा <sup>3</sup>
3. <sup>4</sup> पत्याकाशाङ्गदेव्या <sup>5</sup> सुगणैर्विन्द्य संख्या कियत्यनुजैः मता श्रीमञ्ज
4. यन्तीपुरपत्तनेस्मिन् <sup>6</sup> । अस्त्यार्थः । अथ वडगोषायि सिंहभूपालपत्या
5. श्रीमत्या काशासत्याभिधान महादेव्याः <sup>7</sup> । डौ आडिगसंज्ञक-  
ग्रामस्य अवधू
6. तेश्वर शिवजगन्नाथवौधरवतार वसुदेवानां <sup>8</sup> प्रीतये च । पिर्ल्ला-  
कान्दि संज्ञक
7. <sup>9</sup> ग्रामर्द्धचष्टिः धर्मपुरसंज्ञक ग्रामर्द्धचष्टिः <sup>10</sup> अनयोगामयोसौमा ।  
पूर्वे अ
8. र्द्धनन्दिराइ सम्बन्धीभूः पश्चिमे धनपुर सम्बन्धीभूः उत्तरे चाओरा  
ओ धर्मपुर स
9. सम्बन्धीभूः दक्षिणे जयन्तीपुर ओ काचाइरकान्दि सम्बन्धीभूः । पूर्वे  
चाओरासम्ब
10. न्धीभूः पश्चिमे शिवनगरसम्बन्धीभूः उत्तरे धडपडिआसंज्ञक नदी  
दक्षिणे ध
11. न पूर ओ पिर्ल्लाकान्दि सम्बन्धीभूः । एतयोर्मध्ये वडघाटस्थशिव-  
लिङ्गं <sup>11</sup> प्रीतये चतु
12. र्दल परिमिताभूमिः हरिपल्कास्य सार्द्धहल परिमिताभूमिः प्राक्-  
दत्ता <sup>12</sup> तदतिरि
13. त्त ससुदायवाटिकाभूमिः २४) चतुर्विंशतिर्दल परिमिता जनसमे-  
तार्पर <sup>13</sup>

<sup>1</sup> Read भूधर०.

<sup>2</sup> Read प्रहृष्टे Meter: उपजाति.

<sup>3</sup> Read ०वडगोसायि०.

<sup>4</sup> Read पत्न्या.

<sup>5</sup> Read सुतगणै०.

<sup>6</sup> Read ०अस्मिन् Meter उपजाति.

<sup>7</sup> Omit विसर्ग.

<sup>8</sup> Read ०भूधरावतार वासुदेवानां.

<sup>9</sup> Read ग्रामेऽर्द्धचष्टिः

<sup>10</sup> Read ०ग्रामेऽर्द्धचष्टिः

<sup>11</sup> Read ०लिङ्गस्य.

<sup>12</sup> Read प्राग्०.

<sup>13</sup> Omit रेफ् in "पं".

14. मार्यतो दत्तमिति <sup>1</sup> एतयोरुपरि समैव पुत्राषादीभूत्तं <sup>2</sup> नास्त्येवेति  
सत्य <sup>3</sup>
15. अनयो कश्चित् <sup>4</sup> कालान्तरे केनापि नेतुं सक्यते <sup>5</sup> तदोधोतेनापि <sup>6</sup>  
वर्त्तते
16. नमे <sup>7</sup> दपोस्तीति सुधौभिः <sup>8</sup> । कार्त्तिकमासस्य २२ द्वाविंशति-  
दिवसी आलि <sup>9</sup>
17. पिरिति ॥

## TRANSLATION.

Om. Salutation to Śiva.

In Śakābda 1725 (expressed in astronomical language) king Rāmasimha having given his consent (प्रहृष्टे), a few pieces of land left (to her) by king Baḍagosāyi have been given, in this city of Jayantīpura, for (the purpose of) pleasing Sambhu, Lord of the Avadhūtas (religious mendicants) as well as (for the pleasure of) the Bhūdhara-image of Sri-Vāsudeva, by Kāsān-gadevi, wife of (Baḍagosāyi), after deliberations with (her) sons and with the approval of the younger (lines 1-4).

Explanation of this (as follows, line 4).

By the Mahādevī (queen) named Śrīmatī Kāsāsati, wife of king Baḍagosāyi Simha (have been given) half yasti (of land) in the village named Pirlākāndi, and half yasti (of land) in the village named Dharmapura for pleasing Śiva, lord of the Avadhūtas, Jagannātha, and Bhūdhara, the incarnation of Vāsudeva (residing) in the village named Dauādig (lines 4-7).

The boundary of these two villages: in the East, the land attached to half of Nandirāi, in the West land attached to Dhanapūra in the North the land attached to Chāurā and Dhanapūra, and in the South land attached to Jayantīpura and Kāchāirākāndi (lines 7-9): In the East land attached to Chāurā in the West land attached to Śivanagar, in the North the river named Dhadapadiā and in the South land attached to Dhanapūra and Pirlākāndi (lines 9-11).

Land measuring four hālas together with Haripalka's land measuring half a hāla (lying) between these (two villages) was formerly given away for pleasing the Śiva-phallus at Baḍaghāṭa. lines (11-12).

<sup>1</sup> Read दत्ता इति.<sup>2</sup> Read पुत्रस्यापिप्रभूत्वं.<sup>3</sup> Read सत्यम्.<sup>4</sup> Read कश्चिञ्चित्.<sup>5</sup> Read न शक्यते.<sup>6</sup> Read तदावधोतेनापि<sup>7</sup> Read दर्पोस्तीति.<sup>8</sup> Read सुधौभिः (विभायन्).<sup>9</sup> Read दिवसीयाः.

With the exception of this (piece of land) the whole of the inhabited region measuring twenty-four hālas with tenants is given in the true sense of the term (परमार्थतः): lines 12-14.

It is also true that upon these no ownership either mine or of my son, exists. No one would be able at any distance of time to take away (these). This (grant ?) exists by the merits of Avadhūtas (आवधूतिन). I have no pride (in making this grant). (This is to be judged) by the learned (सुधीभिः). Document (written on) the 22nd day of the month Kārtika (lines 14-17).

#### NOTES.

1. The notes appended to my "Dhupi Copper Plate Inscription" (J. and P., A. S. B. Vol. XVIII, 1922 No. 1 p. 73) should be referred to in this connection. In Jaintia society being matriarchal among the Syntengs, the throne passes to the nephew after the demise of the reigning king. The reigns of Chattrasing (c. 1770-88 A.D.) and Vijayanārāyana (c. 1788-1790 A.D.) intervened between those of Badagosāyi and Rāmasimha II (Gait: History of Assam, 261-262). Rāmasimha II was thus the nephew of Vijayanārāyana, and was only distantly connected with queen Kāśāsati or Kāśāngadevi. The memories of this pious queen as well as of Badagosāyi are still cherished by thousands in Jaintia for their deeds of charity.

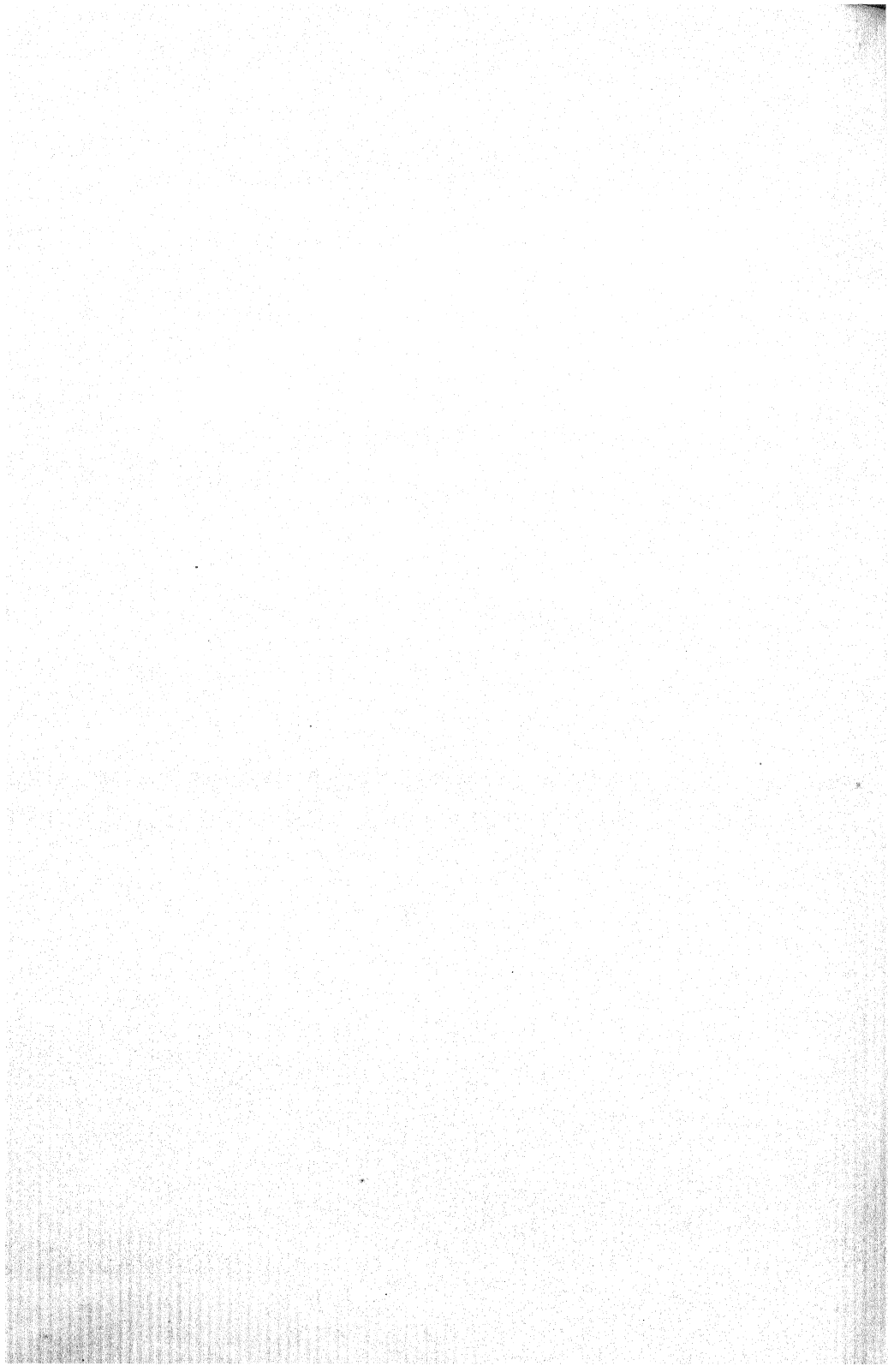
The places mentioned in the inscription still go by the same designations.

2. The distinct existence of two kinds of land, namely, the Royal domain and private lands in the kingdom of Jaintia, has been referred to in my paper on the Dhupi plate. Lines, 2-3, of the Daudig plate make it clear that the reigning kings used to make assignments of land to members of the royal family evidently for their maintenance; and alienations by the assignee for religious purposes at least (here as Devottara), required the sanction of the reigning monarch and permission of the assignee's successors.

In Jaintia the following system of land-measurement was, and is still, in vogue:

- 3 krāntis = 1 kaḍā
- 4 kaḍās = 1 gaṇḍā.
- 20 gaṇḍās = 1 paṇa.
- 4 paṇas = 1 rekhā.
- 4 rekhās = 1 Yaṣṭi or Jaṣṭi.
- 7 yaṣṭis = 1 poā.
- 4 poās = 1 kedāra or keyāra.
- 12 kedāras = 1 hāla or hala.
- = 10½ bighās.
- = about 3½ acres.

3. The Jaintia sovereigns were eclectic so far as the different cults of Hinduism were concerned. They paid their homage equally to Śiva, Śakti and Viṣṇu. The Jaintiapur Copper Plate Inscription of Kāsāsati (to be shortly published) proves their devotion to Śakti (Kālīkā).



27. Jaintiapur Copper Plate Inscription of Baḍagosāyi,  
A.D. 1770.

By PROF. K. M. GUPTA, *Assam Educational Service.*

PRELIMINARY.

This copper plate is in the custody of the present "rājā" of Jaintiapur who kindly showed me the inscription. I understand it is the property of the Mohānta of the temple of Kālī at Jaintiapur (26 miles from Sylhet). On examination I found it to be the same as is briefly noticed by Sir Edward Gait in his "Report on the progress of Historical Research in Assam." page 16. "This plate sets forth that the king, Baḍagosāiṇ Simha, having become a sannyāsi, makes grant of 192 kedāras of land to Līlā Puri Swāmi, with the consent of his nephews and nieces, including his successor, Chattra Simha, and in the presence of his Prime minister, U. Maupnar Laskar, and the commander-in-chief, Mānikya Ray."

I edit and publish the inscription for the first time.

The plate measures  $6\frac{1}{2}" \times 8\frac{1}{2}"$  and has an upper projection in the middle with a hole in it evidently for the purpose of suspending the plate. The royal seal is just beneath this projection. It consists of three circles, one within another. The circle in the middle is composed of dots. Within the inmost circle there is the design of a jumping lion with its head turned towards the right, over a creeper or a bunch of lilies. The diameter of the seal is  $1\frac{7}{8}"$ . It is nearly the same as is to be found in the other Jaintiapur Plates.

The inscription consists of 23 lines, and the language is Sanskrit up to line 15 and Bengali from line 15. It is throughout prose. There are a few orthographical errors, principally due to dialectic provincialism, e.g. तुमार for तोमार (lines 17-18) कुन for कोन (l. 19) केय for केह (l. 20), etc. There are also syntactical mistakes, such as the instrumental case-ending for the sixth case-ending in खामिनो (ll. 4-5), omission of euphonic combination, etc. The characters are modern Bengali with slight modifications, e.g. the doubling of a letter is indicated by the addition of a व to it. The য is like Bengali চ. The inscription as pointed out refers itself to the reign of Baḍagosāyi, who is the 17th king in descent in the line of Jaintia kings, and presumably reigned from 1731 to 1770 A.D. (See J.A.S.B. 1895, vol. lxiy, page 246). It is dated Kartik 17, Śākābdā 1692 (1770 A.D.).

## TEXT.

1. ओम्<sup>१</sup> अनुदिनज्ञानवितरणजनितपुण्यवल्लीवलघितभूमण्डल<sup>२</sup> श्रीश्री-  
लीलापुरिखा
2. मियोगिवरेषु ॥ प्रचण्डदोर्दण्ड गृहीतकोदण्ड निक्षिप्तकाण्ड खण्ड-  
खण्डौघ
3. तारिमुण्डजनित कौर्त्तिपरिपालितसुनगरजयन्तीपुरपुरन्दरश्रीश्री-  
वड़
4. गोसायि सिंहभूपालः स एव सन्नासग्रहणात्<sup>३</sup> श्रीश्रीलीलापुरि-  
खामि
5. ना वक्तात् परमहंसमन्त्रं गृहीत्वा अवधूताश्रमे<sup>४</sup> श्रीश्रीमन्नाजपुरिअ
6. वधूत<sup>५</sup> इति ख्यातिमान् विराजते स एव मठमन्दिरं दत्वा तन्निर्व्वा-  
हार्थं
7. <sup>६</sup>श्रीश्रीगुरोल्लीलापुरि प्रीत्यर्थञ्च तच्चरणे दानवत्यधिक भूतकेदार
8. परिमिताभूमिः स्वत्वपरित्यागेनार्पिता सा भूमिर्यत्र कृषकमनुष्यैः
9. सह दातव्या <sup>७</sup>तद्भाषां ज्ञातव्या परन्तु स्वपरिवाराणां <sup>८</sup>स्वष्टप
10. ति अनुजाभागिनेय <sup>९</sup>स्वष्टजापतिभागिनेयौनां श्रीउरखाडुकु
11. यर श्रीमती गौरीकुयरी श्रीमत् श्रीकृत्रसिंहमहाराजाधिराज
12. श्रीजाताकुयर श्रीमतीशुनाकुयरीणामनुमत्या <sup>१०</sup>तदत्वा श्रेष्ठमन्त्रि
13. णोः श्रीउमउपनारलस्कर श्रीमाणिक्य राय सेनापत्योर्व्वर्त्तमाने
14. श्रीश्रीवड़गोसायिसिंहभूपालस्य भूदानपत्रिकेयं विराजते <sup>११</sup>तरा
15. परं भासया<sup>१२</sup> ॥ आगे आमार अधिकारेते खरिलग्रामर
16. वानाक्षिरखलामवलग १६ < धोल हाल भूमि कृषाण मनुष्यसमेत

<sup>१</sup> Expressed by a symbol.<sup>२</sup> Read ०लीलापुरी०<sup>३</sup> Read ०लीलापुरीखामिनी<sup>४</sup> Read गृहीत्वावधूताश्रमे<sup>५</sup> Read ०राजपुर्थवधूत<sup>६</sup> Read ०गुरोल्लीलापुरी०<sup>७</sup> Read तद्भाषायां<sup>८</sup> Read स्वष्टपत्यनुजा०<sup>९</sup> Read सह०<sup>१०</sup> Read ताम् दत्वा वा सा दत्ता<sup>११</sup> Read तराम्<sup>१२</sup> Read भाषया

17. तुमार<sup>1</sup> सेवार निमित्त आमार खत्वपरित्यागे दिलाम एइ भूमिर उ  
 18. पर आमार खत्व नाइ यथेच्छ दानविक्रयभोगाधिकार तुमार<sup>1</sup> ए  
 19. ते यदि <sup>3</sup>कुनकाले आमार राजवंशेते उत्पन्न हइया एइ भूमिके  
 ये अ  
 20. भिकार करे आर अन्य वा केय<sup>3</sup> अधिन<sup>4</sup> करे तवे ये जातिर ये  
 द्रव्य भक्ष<sup>5</sup> ना  
 21. हय ताके भक्ष<sup>6</sup> करे आर तार स्त्रि<sup>7</sup> तार माता ममान हय एत-  
 दर्थे भूदान  
 22. पत्र लेखिया दिलाम इति प्रकाब्दा १६६२ साल तेरिक् ११७  
 कार्तिक वदवार<sup>6</sup>  
 23. तिथि शुक्ला द्वादशि<sup>10</sup> ॥

## TRANSLATION.

Om (expressed in symbol). To Śrī Śrī Lilāpurisvāmī, the great sage (who is like) the earth encircled by the creeper of merit acquired by his distribution of knowledge day after day (1-2).

King Śrī Śrī Badagosāyi Simha, the Purandara (i.e. king) of the beautiful Jayantīpura which (or whose reputation) is maintained by the fame acquired by the crushing into pieces of enemy's head with the arrow thrown from the bow held by violently strong hands, having taken to the life of a sannyāsī (ascetic) and having accepted "paramahansa mantra" (the vow of a great mendicant) from the mouth of Śrī Śrī Lilāpurisvāmī, he now resides in the abode of an Avadhūta (after assuming) the name of Śrī Śrī-madrājapuri avadhūta (2-6). After having given a temple, he has made over one hundred and ninety-two Kedāras of land with all rights abandoned to his preceptor's feet for the maintenance of that (temple) as well as for pleasing his spiritual preceptor, Śrī śrī Lilāpuri (6-8). Wherever that land should be given with cultivators and tenants, it should be announced in (popular) language (8-9). Now this is given

<sup>1</sup> Read तोमार<sup>2</sup> Read कोनकाले<sup>3</sup> Read केह<sup>4</sup> Read अधीन<sup>5</sup> Read भक्ष्य<sup>6</sup> Read भक्षण<sup>7</sup> Read स्त्री<sup>8</sup> Read तारिख<sup>9</sup> Read वधवार<sup>10</sup> Read द्वादशी

with the permission of the members of his own family—sister's husband, younger sister, nephew, husband of sister's daughter and niece—who are respectively) Śrī-Urakhāḍa kuyara, Śrī matī Gaurikuyarī, Mahārājādhirāj śrīmad-Chatrasimha, Śrī Jātākuyara and Śrīmatī Śunākuyarī. This deed of gift of land by king Śrī-śrī Baḍagosāyi Simha, is made in presence of the Prime minister, Śrī Umaupnar Laskara and of the General, Śrī Mānikya Rāya. In another language (9-15): with all rights given up I endow, on the whole 16 Hālas of land including Bānāchirakhalā (attached to) Kharilagrāma, with cultivators and tenants, (which were) formerly in my possession, for your maintenance (15-17). I have no right upon this land. The right of gift, sale and enjoyment is yours as you will (17-18). If at any time any one having been born in my line subjugates this land or any other person dominates over it, then he eats the food not to be eaten by his caste, and his wife becomes, as if, his mother (19-21). For this purpose I have executed this deed of land-grant (21-22). Dated the 17th Kārtika, Wednesday, the twelfth day of the moon in her Bright fortnight, Śakābdā year 1692 (lines 22-23).

#### NOTES.

The notes appended to my "Dhupī Copper Plate inscription of Rāmasimha" (J. and P., A.S.B. new series, Vol. XVIII, 1922, No. 1, August 5) should be referred to in this connection.

The inscription is an important land-mark in the history of Saivism in this eastern part of India. It manifests the vigorous influence exercised by this form of Hinduism on the non-Aryan Syntengs of the Jaintia Hills.

It is noteworthy that though the Synteng kings of Jaintiapur had adopted Hinduism they followed their tribal custom as to matters of succession. The society being matriarchal, the nephew (son of the sister), and not the son of the reigning king, was the heir-apparent to the throne.


The villages Kharil and Vānāsirkhalā still go by the same names and are within the jurisdiction of the Jaintiapur thānā in the district of Sylhet.

#### APPENDIX.

##### *A Coin from Jaintiāpur, Sylhet (Assam).*

This coin is in the possession of the "rājā" of Jaintiāpur, and is dated Śakābdā 1653 (A.D. 1731). (Sir) Edward Gait also notices a coin of this year in the J.A.S.B., 1895, Vol. LXIV, part 1, page 243, and ascribes it to the reign of Baḍagosāyi Simha, the king whose inscription is published herewith.

The characters are Bengali and the language Sanskrit.

	(Text).	
Obverse		Reverse
1. श्रीश्रीज		1. श्री श्रीशि
2. यन्तीपुरपु		2. व चरण क
3. रन्दरघ्य शा		3. मल मधुक
4. के १६५३		4. रघ्य 

## (Translation).

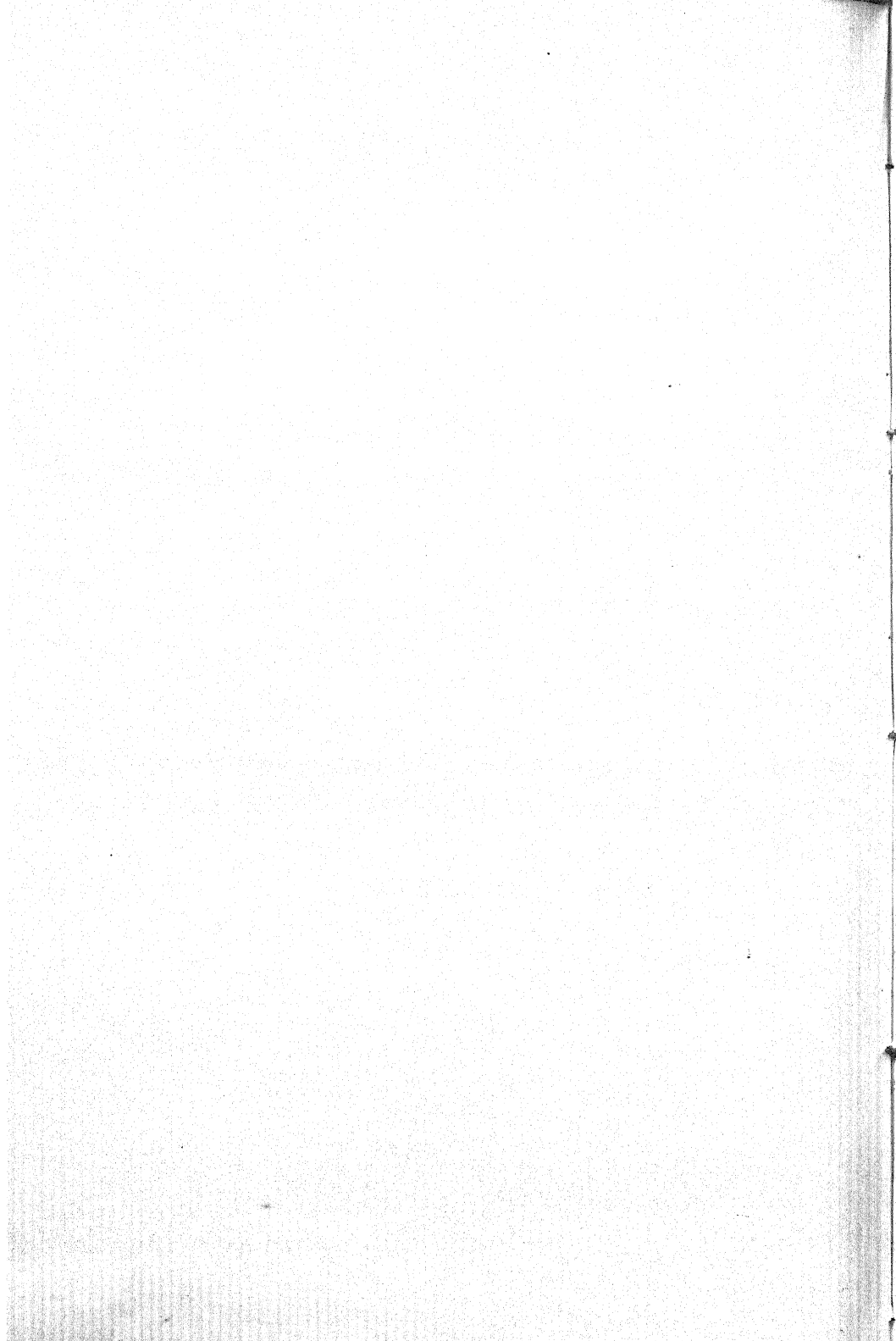
Obverse : Of the Purandara (i. e. king) of Śrī-śrī Jayanti-pura. In Śakābdā 1653 (A.D. 1731).

Reverse : Om (expressed in symbol). Of the Bee of the Lotus-feet of Śrī-śrī Śiva. (A ṣatkona symbol).

Weight : about 162 grains.

Metal : Silver, apparently very pure. I have not been able to get it chemically examined.

Shape : Round, the edge being plain and not milled. Around the inscriptions there are three circles, one inside another. The circle in the middle is composed of dots. The "Om" symbol has been put along with the middle circle, and there is a feather-design just above the first line of the Reverse side. The diameter of the coin is  $1\frac{1}{10}$ ".



## 28. Sāñchī Inscription of Śrīdharavarmman.

By N. G. MAJUMDAR, M.A., *Lecturer, University of Calcutta.*

This inscription comes from the village of Kānakheḍa, near Sāñchī, in the Bhopal State, and is now in the Sāñchī Museum of Archaeology.<sup>1</sup> It has been edited by Mr. R. D. Banerji,<sup>2</sup> in *Epigraphia Indica*, Vol. XVI, pp. 230-33. I first read the inscription in 1918 from two ink impressions kindly made accessible to me by Dr. Bhandarkar. I have now read it over again, and compared the published text with the reproduction accompanying Mr. Banerji's article, as well as with the two aforesaid impressions, which are in the Archaeological Section, Indian Museum. I have to thank Mr. Chanda for having placed them at my disposal for the second time and thus enabling me to re-edit the inscription.

It consists of 6 lines of writing, which covers a space of  $2'2\frac{1}{2}"$  by  $6\frac{1}{2}"$ . The size of such letters as *k*, *r* and *l* varies between  $1\frac{1}{4}"$  and  $1"$ , and such as *bh*, *y*, *v* and *ś* between  $\frac{1}{2}"$  and  $\frac{3}{8}"$ . The inscription is in a very bad state of preservation. Hence many letters are damaged and have peeled off here and there.

The characters belong to the so-called 'Western Variety' of the Gupta alphabet and exhibit a number of typical Southern features,<sup>3</sup> e.g., the peculiar type of medial *i* shooting upwards; *k*, *r*, and *l* with elongated verticals (e.g. in *vejayike* and *samvatsare*, l. 2, and *bahulasya*, l. 3); a similar elongation in the case of *p* and *b* when medial *u* or *ū* are added to them (e.g. in *sambuddhayā* and *pūrvvakam*, l. 3); the use of the archaic type of *m*; and the rather ornamental treatment of the subscript *y* and *r* (e.g. in *ādhiḡamya*, l. 4, and *Śrīdhara*, l. 6). There is one instance of final *m* in *siddham* occurring in the left margin. Palæographically the inscription may be compared with two other inscriptions, both coming from

<sup>1</sup> See *Catalogue of the Sāñchī Museum* (1922), p. 33 (A. 98), where it is described as follows: "Inscribed stone (length 2'6"; high 9") from Kānakheḍa, near Sāñchī, where it was used in a well. Dark grey sand stone. The inscription is written in Brāhmī characters of the Gupta period. The language is Sanskrit. A considerable portion of the epigraph is defaced. It records the digging of a well by one Mahādaṇḍa-nāyaka Śaka Śrīdharavarman, son of Śaka Nanda."

<sup>2</sup> For earlier references see his *Progress Report*, *ASI. WC.*, 1917-18, p. 37; and 1919-20, p. 53.

<sup>3</sup> Cf. the alphabet of Jaggayapeta inscriptions, Bühler, *Ind. Pal.* (Trans.), p. 43; Chanda, "Some unpublished Amarāvati inscriptions," *EL.*, Vol. XV, p. 67, No. 27; Majumdar, Cinna inscription of Śrī-Yajña Sātakarpi, *J.A.S.B.*, 1920, p. 327 and pl.; and Kielhorn, Tālaguṇḍa pillar inscription, *EL.*, Vol. VIII, p. 24 and pl.

Sāñchī. One of them belongs to the reign of Vāsiṣka and the other to that of Candragupta II. The former would certainly be placed considerably earlier than the present record. In the inscription of Vāsiṣka,<sup>1</sup> for instance, the vertical line of *dh* is straight resembling the old Brāhmī form of the letter; in the present inscription it has become a curve and the whole letter has taken oval-like appearance. Again, the letters *p* and *h* are in most cases right-angular, and the left side is straight and not broken in the middle as is generally in the present record. And further, the subscript *y* is not at all ornamental, and the subscript *r* is only a short curve stroke attached to the foot of letters. Thus on the whole the characters of our inscription are more akin to those of the Sāñchī inscription of Candragupta II,<sup>2</sup> dated 412 A.D., and therefore should be assigned roughly to the Early Gupta period.

The language of the inscription is Sanskrit, with a few Prakritisms, such as *trayodaśama* for *trayodaśa*, l. 1, *vejayika* for *vaijayika*, l. 2, and *khānāpita*, for *khanita*, l. 6; for *khānāpita*, cf. Aśoka's R.E. II, *kūpā ca khānāpitā*. An abnormal compound is found in l. 1—*ajīlasenasya svāmi-Mahāsena-mahā*..., where ordinarily one would expect a genitive in *Mahāsena*. A case of wrong *vibhakti* occurs in *divasam*, l. 3, instead of *divase*. In lines 4-6, there are remnants of a *śloka* in *Sārdūla-vikrīḍita* metre. Mr. Banerji thinks that only the last two lines contain the *śloka* (op. cit., p. 230). In fact however it commences from the middle of line 4; the first *pāda* shows the following scheme of metre according to my restoration:

$\bar{\text{kā}} \text{ } \bar{\text{yo}} \text{ } \bar{\text{ . . . }} \text{ } \bar{\text{h}} \text{ } \bar{\text{pra}} \text{ } \bar{\text{sa}} \text{ } \bar{\text{nna}} \text{ } \bar{\text{sa}} \text{ } \bar{\text{li}} \text{ } \bar{\text{laḥ}} \text{ } \bar{\text{sa}} \text{ } \bar{\text{rvā}}$   
 $\text{dhi} \text{ } \text{ga} \text{ } \text{myaḥ} \text{ } \text{sa} \text{ } \text{dā}.$

The composition of the record cannot fail to remind us of the *kāvya* style of the inscriptions of the Gupta period.<sup>3</sup> The single fragmentary verse that the epigraph contains is remarkable for its simplicity and is in striking contrast with the prose portion which shows a comparatively involved style of composition. The use of long compounds like *śāśvata-candra-sūryya-kālīko* = *yam*, *kalyān-ābhyudaya-vriddhy-artham*, *aksaya-svargg-āvāpti-hetor*, etc., seem to be quite in keeping with Daṇḍin's maxim (*ojah samāsa-bhūyastvam* = *etad* = *gadyasya jīvitam* — *Kāvya-darśa*, I. 80) regarding the Vaidarbhi style of prose. Expressions like *priya-darśana*, *dharmm-āmala*, *prasanna-salila*, and *śāśvata*, which qualify *kūpa*, or 'the well,' and *guṇavat*,

<sup>1</sup> Cf. Bühler, *EL.*, Vol. II, plate opposite p. 368 and *Sāñchī Museum Catalogue*, p. 30 and pl. II (A. 82).

<sup>2</sup> Fleet, *Gupta Inscr.*, Pl. III, B opposite p. 28.

<sup>3</sup> See V. S. Ghate's translation of Bühler's article 'Die Indischen Inschriften und Kuntspoesie' in *Ind. Ant.*, 1913.

which qualifies the donor, are again typical of the Kāvya style as exhibited in the Gupta inscriptions. Thus with regard to the lake Sudarsana, the expression *sāśvata-kalpa-kālam* is used in the Junāgaḍh inscription of Skandagupta (l. 21).<sup>1</sup> The word *sāśvata* is found again in the compound *sāśvata-candr-ārka* etc. in the Dāmodarpur copper-plate of Kumāragupta I (l. 8),<sup>2</sup> and also occurs, in respect of a temple of Sun in the Mandasor inscription of Bandhuvarmman (l. 23).<sup>3</sup> Compare again *kūpaḥ Śrīdharavarmmanā guṇavatā khānāpito = yam śubhaḥ* (l. 6) with *kūpaḥ = c = ainam = akārayad = guṇa-nidhir = Śrīmān = Mayūrākṣakaḥ* occurring in the Gaṅgdhar inscription of Viśvavarmman (l. 39).<sup>4</sup> The inscription speaks of the donor as being actuated by reverence (*śraddhā*) in carrying out the purpose of the inscription. It is stated (l. 3) that his reverence was awakened by the Sword of Righteousness (*dharmmāsi-sambuddhā*). Such artificial and round about way of expressing a simple fact is possible only in the Kāvya style. The donor's reverence, which is the immediate cause of the gift, is more directly expressed in other inscriptions of the Gupta period. Compare e.g. *bhaktiā bhagavataḥ Sambhoḥ guhām = elām = akārayat* in the Udaygiri inscription of Candragupta II (l. 5),<sup>5</sup> and *bhakti = āvarjita-manasā* etc. in the Sārnāth inscription of Kumāragupta II (l. 2).<sup>6</sup> Of *śabdālaṅkāras* there is to be noted an example of alliteration in *prasanna-salilāḥ sarvv-ādhiḡamyāḥ sadā* (l. 4). The writer of the inscription does not however appear to have been a very skilful composer of Sanskrit as is shown by the fact, that he uses the word *senā* thrice in succession in l. 1, *dharmma* no less than four times and the word *sāśvata* twice.

As regards **orthography**, the doubling of a consonant following a superscript *r* is to be noted, e.g., in *vīryy* (l. 1), *dharmma* (l. 2), *pūrvvakam* (l. 3) and *sarvv* (l. 4), wherever it is sanctioned by Grammar. This rule therefore does not apply in the case of *ś*, e.g., in *darśano* (l. 4), where doubling does not take place.<sup>7</sup> The letters *th* and *dh* following a *r* become respectively *tth* and *ddh*, e.g., in *yaśo-rttham* (l. 3) and *r = ddharmm-āmalaḥ* (l. 5); there is however an exception in *vīddhy-artham*. Another point to note is that lingual and dental nasals are employed instead of *anusvāra*, e.g., in *daṇḍa-nāyakena* (l. 2), *Nanda* (l. 2) and *candra* (l. 4). The two *na-s* are throughout correctly used. A clerical error seems to occur in *śraddha* (l. 2) which is incorrect for *śraddhā*.

<sup>1</sup> Fleet, *Gupta Inscr.*, p. 61.

<sup>2</sup> Basak, *EL.*, Vol. XV, p. 130.

<sup>3</sup> Fleet, *Gupta Inscr.*, p. 84.

<sup>4</sup> *Ibid.*, p. 76.

<sup>5</sup> *Ibid.*, p. 35.

<sup>6</sup> *ASR.*, 1914-15, p. 124.

<sup>7</sup> The doubling of a lingual sibilant after a superscript *r* would occur, in *varṣa-sahasrāya* (l. 2), if of course the reading of the second letter *ṣṣ* is correct. For such wrong doubling of *s*, see Kielhorn's remarks, 'Sarasavni plates of Buddharāja', *EL.*, Vol. VI, p. 295, and n. 4.

The object of the inscription is to record the excavation of a well by the Mahādandanāyaka Śaka Śrīdharavarmman, son of Śaka Nanda. The purpose of the record seems to be mentioned twice, first in the prose portion and for the second time, in the concluding verse. As a considerable portion of line 4 cannot be restored owing to its damaged condition it is not possible to ascertain exactly what information it wanted to convey. But the instrumental in the donor's name, *Śrīdharavarmmanā* in line 2, together with the statement in the following line 'for the increase of welfare and prosperity, for the attainment of eternal heaven and for the sake of merit and fame' makes it probable that the following passage originally contained a verb in the passive voice as well as its object which would of course have been the meritorious deed the donor performed.

I am afraid I cannot agree in regard to some of the important issues raised by Mr. Banerji, and therefore feel it necessary to consider them briefly here :

(1) In line 1, Mr. Banerji reads *bhagavalas = tridaśa-gaṇa-senāpater = ajitasenasya svāmi-Mahāsena-mahāteja . . . s-āditya-vīryya-Jivadāma . . .* According to him the inscription belongs to the reign of Svāmi-Jivadāman, father of Rudrasīṅha II 'of the third dynasty of the Satraps of Surāshṭra.' It opens, says he, 'with a number of adjectives and the first line ends with the name of Jivadāman' (op. cit., p. 230). Elsewhere too he has expressed himself in a similar confident tone and in no equivocal language. Thus in his *Progress Report, ASI. WC.*, 1919-20, p. 53, we read in connection with a newly discovered Junāgaḍh inscription of Jivadāman I : "The only other Jivadāman known to history is the father of the Kshatrapa Rudrasīṅha II, who is known to us from his Sanchi inscription of the Śaka year 201." (The italics in the quotation are mine). The definite assertion that the Sāñchi inscription belongs to the reign of Jivadāman, father of Rudrasīṅha II, deserves our special attention as it proceeds from no less a scholar than Mr. R. D. Banerji. He has not even entered into a discussion as regards the reading '*Jivadāma*' perhaps giving us to understand that it is beyond all possible doubt. And one rising from a perusal of his article surely carries the impression that whatever might be said regarding his other statements this at any rate is a fact that the inscription is one of Jivadāman. And yet after having devoted my best attention to the matter and spent days over it I have to openly admit that I fail to trace the name of Jivadāman anywhere.<sup>1</sup> The

<sup>1</sup> The *Sāñchi Museum Catalogue* published by the Archaeological Department, which gives at p. 33 a description of the epigraph, does not mention Jivadāman at all. (See quotation above.) The description is by Mr. Ramaprasād Chanda.

particular portion of line 1, alleged to contain his name, damaged as it is, retains sufficient traces of letters which render the reading *Jivadāma* quite improbable.<sup>1</sup> On the other hand, close inspection reveals the following reading:—*viryy-[ār]jjita-v[i]ja*.... I have no doubt that the letter after *v[i]ja* was *ya*, the entire word being *viyaya* or 'victory.' As the inscription-stone has broken off from the right hand corner a number of letters have disappeared. It is not, however, difficult to conclude that the portion most probably contained an adjunct of Śrīdharavarmman, something like *viyaya-yaśah-patākena* or so forth, used so frequently in Indian epigraphs of this nature. The reading proposed by Mr. Banerji would be precluded also by another consideration, namely, the absence of royal titles. It would be curious that a king should be mentioned without any titles indicative of royal position, not even the most ordinary *svāmin* or *rājan*.<sup>2</sup> The former title, viz., *svāmin* is no doubt used in the record, but in the compound *svāmi-Mahāsena* etc. where it undoubtedly refers to the god Mahāsena. Mr. Banerji takes it as an epithet of Jivadāman (op. cit., p. 231) which, however, is clearly a mistake. The use of *svāmin* as a title of Mahāsena occurs in many other records<sup>3</sup> and is nothing new to us. Facts being such as those stated above the reading of Jivadāman's name becomes quite unwarrantable.

(2) The inscription (l. 2) is dated in the 13th regnal year of some king, and Mr. Banerji holds that he is no other than Jivadāman. This is of course a necessary outcome of his reading Jivadāman's name in line 1, the basis of which I have just examined. Apart from that there is distinct internal evidence, and this is mentioned by Mr. Banerji himself, pointing to the fact that the epigraph belongs to a quite different individual, the year 13 having nothing whatsoever to do with Jivadāman. The name of the Śaka Śrīdharavarmman who is called a Daṇḍanāyaka or 'general' occurs in the prose portion in line 2, and no other personal name intervenes between it and the phrase *sva-rājya-ābhivṛddhikare vejayike saṁvatsare trayodaśa-me*. Here *sva-rājya* or 'his own reign' can only refer to Śrīdharavarmman's and of none else according to the customary rules of syntax. This point has also been perceived by Mr. Banerji. But he says that as Śrīdharavarmman 'does not

<sup>1</sup> What Mr. Banerji reads as *Ji* is clearly a double *jj*. The letter following it is not *va*, but *ta*, and what he reads as *da* and *ma* are remnants of *va* and *ja* respectively.

<sup>2</sup> These are the titles commonly found attached to the names of Kṣatrapa rulers of Western India. As this portion of the record is in prose, there could be no possible omission of titles on the plea of metrical exigencies.

<sup>3</sup> See, e.g., Kadamba land grants, *EI.*, Vol. VI, p. 14, l. 2.

claim any royal titles' it is 'extremely improbable' that the year 13 refers to his reign.<sup>1</sup> Śrīdharavarmman, however, has the title 'Mahādaṇḍanāyaka' which need not be looked upon as indicating his subordinate rank, as will be shown further in the sequel.

(3) In line 6, immediately after the verse, Mr. Banerji recognises a date symbol which he reads as 200. He refers it to the Śaka era and thus arrives at 279 A.D. which he takes to be the date of the inscription (op. cit., p. 231). First of all, the symbol has no resemblance with a 200 figure (see Bühler's Tables). Secondly, it would be well nigh impossible to hold that a date symbol should abruptly follow a verse 'without an explanatory word' like *varṣa*, *saṁvatsara*, etc. Both the difficulties seem to have occurred to Mr Banerji. As regards the former, he suggests that the symbol for 200 on coins has been modified in the inscription as the scribe has written it 'at one stroke of the pen.' But I do not consider that the grounds adduced by Mr. Banerji in support of the reading are sufficient. The only alternative remains, therefore, to take the sign in question as a sign of interpunction, indicating the end of the verse. At some distance from the sign there occurs a letter *sa* which is followed by apparently three numerical symbols. If there is any date in the record it is here that we should look for it. The first symbol is not very clear; but the second one is certainly 40, to which the third symbol denoting 1 is joined, making up the number 41. I tentatively read the first symbol as 200. The letter *sa* (*saṁ*) immediately preceding it stands probably for *saṁvatsara*. If the reading 241 is justifiable, it should in all likelihood be assigned to the Śaka era. Thus we arrive at the year 319 A.D. as the date of the inscription. I am, of course, not prepared to go so far as to say that my reading of the date is certain, although I consider it to be a far more probable reading than that of Mr. Banerji.

The record confirms an interesting ethnological inference, namely, that the Śaka settlers in India were, in course of time, thoroughly Hinduised and even adopted names quite in the Hindu style.<sup>2</sup> Thus Nanda and Śrīdhara-varmman<sup>3</sup> are good Hindu names. The latter again appears to be a devout worshipper of Bhagavat Mahāsenā (Kārttikeya) like the Early Kadambas (see Kielhorn, *EI.*, Vol. VIII, p. 35 and n. 5), and

<sup>1</sup> See above my note on the absence of royal titles. Mr. Banerji forgets that according to his reading Jivādāman also will have no titles, royal or otherwise.

<sup>2</sup> D. R. Bhandarkar, "Foreign Elements in Hindu Population," *Ind. Ant.*, 1911, pp. 13-15.

<sup>3</sup> Cf. the name Agnivarman, a Śaka—Nāsik cave inscr., No. 15, *EI.*, Vol. VIII, p. 88.

what is more, believes like an orthodox Hindu that by making provision for water, he will acquire great merit, and even have eternal residence in heaven.<sup>1</sup>

Another interesting fact, connected with early Indian administrative history, is gleaned from the present record. It demonstrates clearly that a general could, if necessary, assume the position of sovereign ruler and yet continue to style himself only as 'general.'<sup>2</sup> The words *dharmavijayī* (l. 2) and *dharm-āsi* (l. 3), i.e., "the righteous conqueror" and "the sword of righteousness," used with reference to Śrīdharavarmman, bear in my opinion more than ordinary significance. It is probable that he originally served under some royal dynasty which he afterwards subverted, and by means of his 'sword' carved out an independent kingdom for himself, just as the *senānī* Puṣyamitra did in the second century before Christ.

#### Text.<sup>3</sup>

1 Siddham<sup>4</sup>(1\*) Bhagavatas = tr[i]daśa-gaṇa-senāpater = ajita-senasya svāmi-Mahāsena-mahā...s-ād[i]tya.<sup>5</sup> vīryy-[ār]jj[i]ta-[vija]<sup>6</sup>....<sup>7</sup>

2 dharmma-vijayinā<sup>8</sup> Śaka-Nanda-putreṇa Mahā-daṇḍa-nāyakena Śakena Śrīdhara-varmmanā var[ssa]-[saha]srāya<sup>9</sup> sva-rājy-ābhivṛddhikare vejayike samvatsare trayodaśa[me]<sup>10</sup>

3 Śrāvaṇa-bahulasya daśamī-pūrvvakam = etad-diva-

<sup>1</sup> Cf. Smṛiti literature, e.g., Viṣṇu, 91. 1; Bṛihaspati, 62; and Atri, 44-46.

<sup>2</sup> There is a unique copper coin, in the Family Collection of Mr. P. C. Nāhār at Calcutta, which seems to throw light on the above point. It is issued by a certain individual who has the title *senāpati* only. It bears legend in early Brāhmī characters and also some of the symbols commonly found on 'punch-marked' coins. The sovereign right of issuing coins is here exercised by a general—a point that is worthy of notice. The coin so far as I know has not yet been described by any numismatist.

<sup>3</sup> B. in the footnotes indicates Mr. R. D. Banerji's reading.

<sup>4</sup> In the original the word stands in the left margin between ll. 3-4. B. reads *siddham*; but the final *m* is very clear on the impressions.

<sup>5</sup> B.—*mahātejas=āditya*.

<sup>6</sup> Restore *vijaya*. B. reads the last four letters as *Jivadāma*. See above.

<sup>7</sup> It is difficult to say how many letters are missing. The compound most probably ended in an instrumental. See above.

<sup>8</sup> B.—*vijayena*.

<sup>9</sup> See Dr. Thomas, *EI.*, Vol. XVI, p. 232, n. 2. The reading *sahasrāya* is certain. Cf. *Rudradāmnā varṣasahasrāya go-brah[m]a....r[tha]m dharmma-kīrti-vṛddhy-artham* ca etc.—Kielhorn, Junāgadh inscription of Rudradāman, *EI.*, Vol. VIII, p. 44, l. 15; also *vāsa-sata-sahasrāya* of the copper-plate of Śiva-Skanda-Varmman, *ibid.*, Vol. I, p. 7; and *varṣa-sahasrāya* of Bhamodra Mohota plate A.D. 502, Barnett, *ibid.*, Vol. XVI, p. 18., l. 3. B. reads *Varmma....sra (śri) ya*.

<sup>10</sup> B.—*trayodaśam[e]*.

saṁ kalyāṇ-ābhyudaya-vṛiddhy-artham = akṣaya-svargg-  
 āvāpti-hetor <sup>1</sup> = ddharma-yaśo-rttham dharmmasi-sambud-  
 dhayā śrāddha(yā) <sup>2</sup>

<sup>4</sup> śāśvata-candra-s[ū][ry]ya-kāliko = yaṁ <sup>3</sup> . . . i . . . mā  
 pi. <sup>4</sup> kāyo <sup>5</sup> — — — — — <sup>6</sup> prasanna-salilah <sup>7</sup> sarvv-ādhigamyah  
 sadā

<sup>5</sup> satvānā[m] priya-darsano jalaṇidhir = ddharm-āmalah  
 śāśvataḥ <sup>8</sup> . . . . . my . . . . . prācy-y . . . . . <sup>9</sup>

<sup>6</sup> [kū]paḥ <sup>10</sup> Śrīdharavarmmaṇā guṇavatā khānāpito  
 = yaṁ subhaḥ[||] <sup>11</sup> Sa(m)[200] 40 <sup>12</sup> 1[||] <sup>13</sup>

<sup>1</sup> B.—*avāptim* = *e(?) tad*.

<sup>2</sup> Read *śrāddhayā*.

<sup>3</sup> B.—*Sākhāte catuḥ-satya . . tuko* = *yaṁ*.

<sup>4</sup> Metre: Śārdūla-vikṛīḍita.

<sup>5</sup> Not read by B.

<sup>6</sup> Not read by B.

<sup>7</sup> Not read by B.

<sup>8</sup> B.—. *gataḥ*.

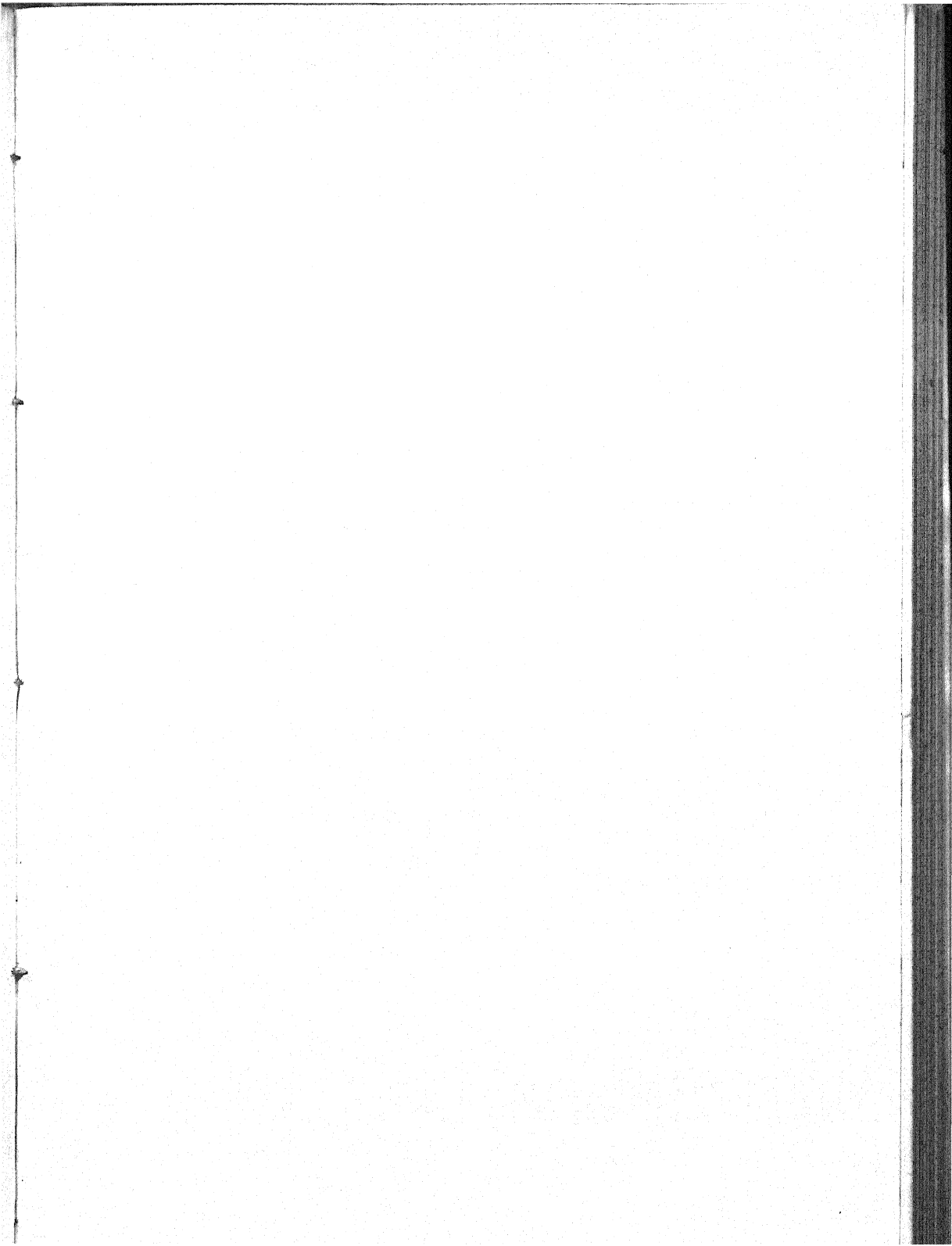
<sup>9</sup> This portion is too defaced to be restored. It contained the third *pāda* of the verse.

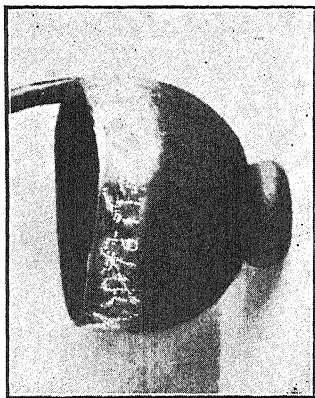
<sup>10</sup> B.—*kū[paḥ]*.

<sup>11</sup> Here is probably a sign of interpunction which B. reads as 200 symbol.

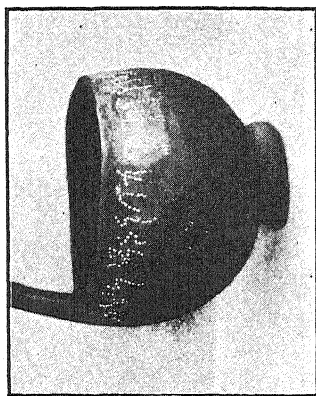
<sup>12</sup> B.—*stu*.

<sup>13</sup> Here is another sign of interpunction not indicated by B.; cf. this mark with a similar one in a Bodhgayā inscription of Mahānāman (Fleet, *Gupta Inscr.*, Pl. XLI).

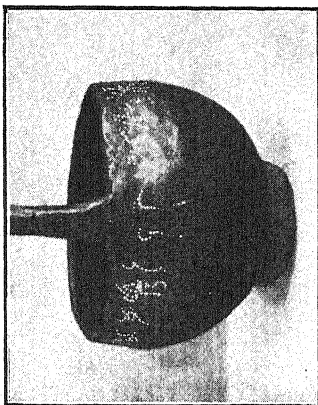




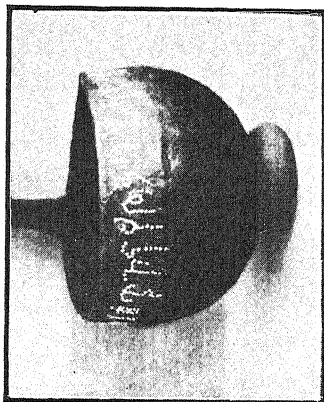
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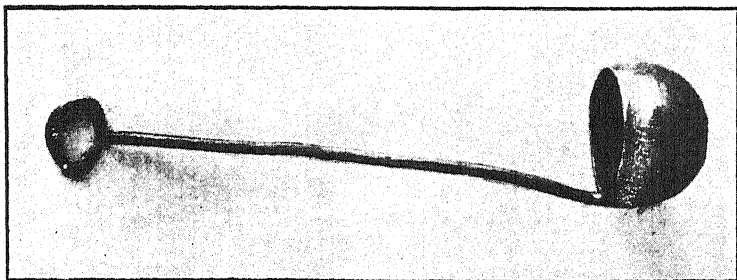
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II



IV



I

## 29. An Inscribed Copper Ladle from Hazara.

By N. G. MAJUMDAR, M.A., *Lecturer, Calcutta University.*

In March, 1924, I received through the kindness of Mr. H. Hargreaves, Superintendent, Archaeological Survey, Frontier Circle, five photo-prints of a copper ladle (see fig. I) bearing a Kharoṣṭhī inscription. Mr. T. B. Copeland, M.A., I.C.S., Deputy Commissioner of Hazara, to whom the object now belongs, has very kindly supplied me with the following information: "The ladle was not found by myself, but was sold to me by a local villager who professed to have found it at the site of the ruins of a building which Mr. Hargreaves tells me was a Buddhist Monastery. I have no reason whatever for doubting that the ladle was actually found at the spot indicated. This spot is covered with forest, and is situated in the foothills about one mile east of Shinkari, the headquarters of a Police Station, 11 miles north of Manshera, in the Hazara District of the N.W.F. Province." I learn from Mr. Hargreaves that the exact place where the ladle was discovered is called Bedadi.

The ladle is 9 inches in length; the height of the bowl is 1·4 inches and its diameter 1·9 inches. It weighs 2·7 oz. The inscription which consists of a single line is incised on the bowl (see figs. II-V) —The writing is highly cursive and composed of letters formed by a series of punctured dots instead of consecutive lines, a system that recalls a number of other Kharoṣṭhī records which are in metal, as for instance, the Taxila Copper-plate of Patika in the London Royal Asiatic Society.<sup>2</sup> The carelessness of the artisan is palpable from the occurrence of such unmeaning dots as e.g. those on the top of *ra* in *Uraśa*, and between *di* and *śe* in *dīśe*.

The characters are Kharoṣṭhī of the Kuṣāna period and may be compared with those of the Sue Vihār Copper-plate of the reign of Kanīṣka.<sup>3</sup>—The language is Prakṛit of the Gandhārian variety and shows close resemblance to Sanskrit. The use of the conjunct *ry* in *acaryana* and *śy* in *Kasyaviana* is to be noted. All the three sibilants are used; but the occurrence of *ṣ* instead of *ś* in the latter

<sup>1</sup> When this article is already with the Asiatic Society the above communication is received from Mr. Copeland. He wishes me to mention the fact that in 1922, when he was on leave in England, the object was lent to Dr. F. W. Thomas for his study.

<sup>2</sup> *Ep. Ind.*, Vol. IV., p. 54

<sup>3</sup> See my edition, *Sir Asutosh Mookerjee Silver Jubilee Vols.*, Vol. III part 1, p. 459 and Pls.

word is rather abnormal and might have been due to the similarity in pronunciation between the two sibilants in the dialect of N.W. India. The dental *n* is used throughout.

TEXT.<sup>1</sup>

Saghe cadudiṣe<sup>2</sup> Uraśa-raje acaryana na<sup>3</sup> Kaśyaviana  
Sagharachi[tasa] dana.

## TRANSLATION.

"The gift of Saṃgharakṣita to the Kāśyapiya preceptors, at the Buddhist Community of the Four Quarters, in the kingdom of Uraśā."

The mention of Uraśā-rājya, i.e., 'kingdom of Uraśā' is important. According to Sir Aurel Stein Uraśā is "the ancient designation of the hill-region which lies between the upper course of the Vitastā and the Indus. Its greatest part is now comprised in the British District of Hazara."<sup>4</sup> "Its capital," says the same authority, "lay a short distance to the north-east of Abbottabad, in the fertile plateau between Mirpur and Nawashahr, which to this day bears the name of Urash or Rash."<sup>5</sup> The fact that the inscription comes from Hazara gives additional support to the identification. The only other epigraphic document which seems to mention Uraśā is probably the Taxila Silver Scroll of the year 136.<sup>6</sup> It contains in lines 1-2 the passage *Urasakeṇa Īmtaphria putreṇa Bahaliṇa Noacae nagare vasthavaṇa*, which may be translated as: "By Bahalia, son of Īmtaphri, an inhabitant of Uraśā, (now) dwelling in the town of Noaca." The existence of Uraśā as a separate entity in the Kuṣāṇa period deserves

<sup>1</sup> Being dependent on a single set of photographs for the illustration of the record I have not been able to reproduce all letters in each particular figure with the distinctness they show in the original. Thus the letters *ca-du di*, which appear clearly in the original of fig. III, have not come out so clear in the reproduction; the letter *ca* in *acaryana* (fig. IV) is badly reproduced: and the letters *gha-ra-chi*, which are clear in the original of fig. II, are almost imperceptible in the reproduction.

<sup>2</sup> There occur a few dots after *di* which do not form part of any letter and might be due to the failure of the artisan in carrying out the original draft.

<sup>3</sup> This letter is superfluous.

<sup>4</sup> Kalhana's *Rājataranginī*, Vol. I, pp. 215-216. Dr. Stein draws attention to references to Uraśā in Sanskrit literature and to the account of Hiuen-Tsang (see Beal, *Buddhist Records of the Western World*, Vol. I, p. 147) according to whom it lay to the north-west of Kashmir and was dependent on the latter.

<sup>5</sup> *Archaeological Report, N.W.F. and Baluchistan*, 1904-5, p. 41. For Urash or Rash plain see also *Hazara District Gazetteer* (1907), p. 118 and Stein's *Memoir on the Geography of Kashmir*, p. 222.

<sup>6</sup> Cf. Konow, *Sitz. Kön. Preuss. Ak. Wiss.*, 1916, p. 804, and *Ep. Ind.*, Vol. XIV, p. 287; also Thomas, *J.R.A.S.*, 1914, p. 988.

our serious attention. It is however not possible to ascertain which particular dynasty was ruling over the kingdom at the time and what relations it had with the Imperial Kuṣānas. Uraśā must have assumed political importance at least as early as the third century B.C. This follows from the noteworthy fact that one of the two Frontier recensions of Aśoka's edicts comes from Mansahra (District Hazara) which was doubtless included within the Uraśā country.

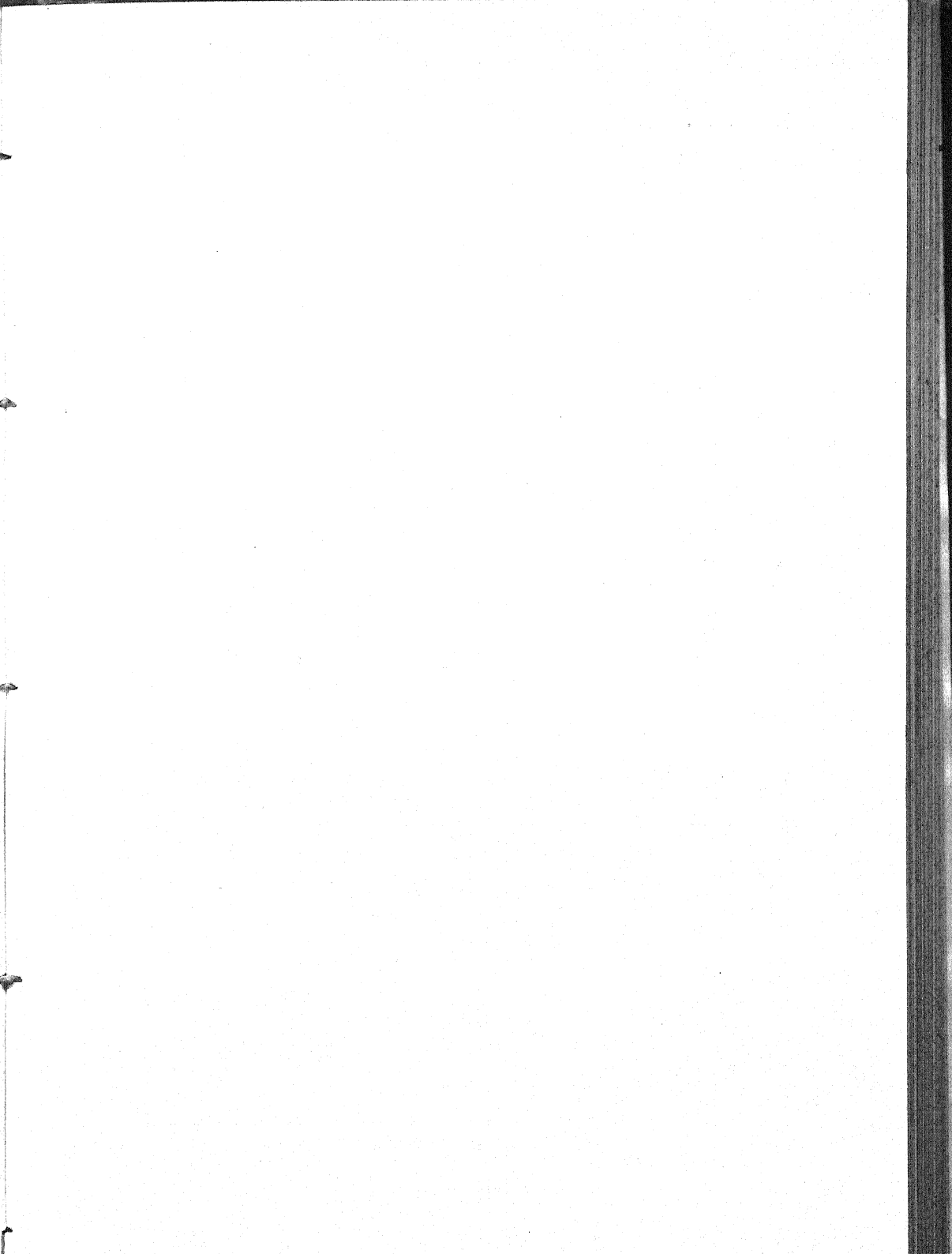
The next point to note is the reference to the *ācāryas* of the Kāśyapiya School of Buddhists who were settled in the modern Hazara district. In this connection I may mention that in 1921, Sir John Marshall discovered at Taxila,<sup>1</sup> a copper ladle similar to the present one and likewise bearing a Kharoṣṭhī inscription. It records that the object was a gift to the Kāśyapiya sect dwelling in the Uttara-ārāma, i.e. the Northern Grove, at Tachāilā, i.e. Taxila. This inscription is also in the Kharoṣṭhī of the Kuṣāna period and consists of dotted letters. Thus the inscriptions on the two ladles from the contiguous districts of Hazara and Rawalpindi throw welcome light on the settlement of the Kāśyapiyas, a sect of whom no sure mention seems to exist in epigraphs hitherto published.<sup>2</sup>

The ladles are of some interest also from the point of view of Buddhistic rituals. They were probably used to pour oil or clarified butter into *dīpas* or lamps to keep them burning. But the exact nature of service which the ladles rendered cannot at present be determined. To this day similar objects are used in India for measuring oil and clarified butter and transferring such liquids from one receptacle to another.

<sup>1</sup> From the site called Mahal close to Sirkap. The ladle is now in the Taxila Museum (No. 21), where I studied it in February, 1924. The bowl of the ladle bears the following Kharoṣṭhī inscription: *Isparakusa daṇamukho saṅghe catudise utara-rame Tachāsilāe Kaśaviana parigraho*, i.e. 'gift of Isvaraka, in the Saṅgha of Four Quarters, in the Uttara-ārāma at Takṣaśilā, for the acceptance of the Kāśyapiyas.' For Uttara-ārāma, cf. *aparila ārāma* (Western Grove) and *udao ārāma* (Northern Grove) occurring in Brāhmī inscriptions (Bhagwanlal Indraji, *Jour. Bo. Roy. As. Soc.*, Vol. V, pp. 321-22). I am grateful to Sir John Marshall for having kindly permitted me to utilise the Taxila ladle inscription in the present article.

<sup>2</sup> Gift of a cave for the Kāśyapiya Arhats is recorded in a Pabhoṣā inscription. See Lüders, *List of Brāhmī Inscr.*, No. 904. On the Kāśyapiyas, which was one of the eleven branches of the Sthaviravāda School, see Vasumitra's account (Beal, *Ind. Ant.*, Vol. IX, pp. 301-302). Hiuen-Tsang found the Kāśyapiyas in the Swāt Valley (Beal, *Buddhist Records*, Vol. I, p. 121).



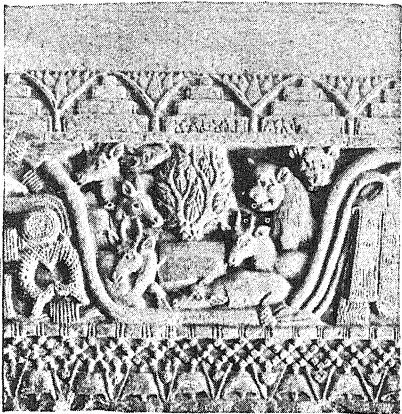




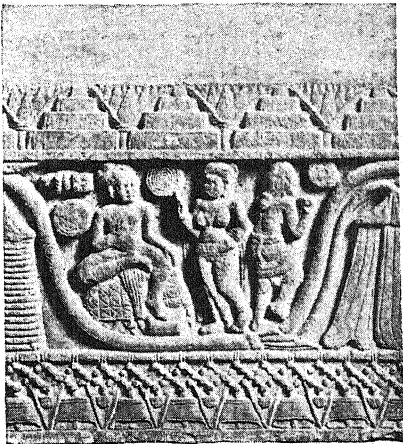
I.



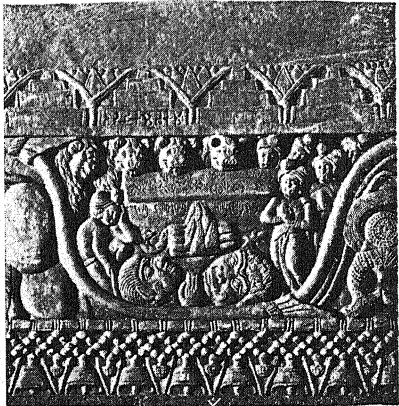
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3.



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### 30. Identification of Four Jātakas at Bharaut.

By DR. B. M. BARUA, M.A., D.Lit.

Since the publication of General Sir A. Cunningham's beautiful and highly instructive monograph—The Stūpa of Bharaut—in 1879, Serge d'Oldenbourg, Rhys Davids and Hultzsch have tried to correct Cunningham's identification of some of the carvings on the railing of the Bharaut Stūpa and have successfully identified some others left unidentified by their predecessor. In spite of these successive attempts, a number of carvings have remained unidentified. My esteemed friend Mr. Ramaprasad Chanda, B.A., Superintendent of the Archaeological Section, Indian Museum, Calcutta, has now seriously taken up the study of these remarkable stone-figures or sculptures and has been able to identify a few more bas-reliefs. A few months ago, he discussed in a monthly meeting of the Asiatic Society of Bengal the identification of two carvings. In this present paper I have selected only four carvings for identification, and so far as I am aware, they have not been identified in the same way by any previous scholar. The selected carvings are shown in Cunningham's plates as:— (1) Plate XXXIII, 6, (2) XLIII, 4, (3) XLV, 3, (4) XLVII, 7.

1. *Plate XXXIII, 6.*—This contains only a small fragment or a broken portion of a sculpture depicting the scene of a monkey seated on an overhanging branch of a tree. The upper part of its body leans forward over a round shaped fruit clasped with its two hands and pressed towards its breast as if embracing the fruit. Its face rests on the fruit and is turned in front. One might take it to be intended to express downward and sneering looks, with eyes gazing at a missing figure lying below at a small distance, and pouting lips to indicate that it is talking to some one. General Cunningham wrongly takes the scene to be one of a monkey seated on a branch of a mango or custard-apple tree, eating one of the fruits.<sup>1</sup> I, on the contrary, conjecture that the missing figure is a being of the crocodile or porpoise species, so that the sculpture may be well explained in the light of the Sumsumāra-Jātaka (No. 208). The Pāli version<sup>2</sup> of the story relates that in days gone by the Bodhisat was born as a monkey in a Himalayan region. In strength he was like an elephant,

<sup>1</sup> The Stūpa of Bharhut, p. 6, and p. 47.

<sup>2</sup> Compare the Sanskrit version in Sēnart's edition of the Mahāvastu (II. p. 246f.) and the "Story of a Porpoise" in Rājendra Lāla Mitra's Sanskrit Buddhist Literature of Nepal, p. 138.

possessed of vigour, and he had a huge body and a graceful appearance. He lived in a forest-home near a bend of the Ganges. In that part of the Ganges there lived a Sumsumāra<sup>1</sup> with his wife. His wife conceived a desire to eat the flesh of the Bodhisat's heart.<sup>2</sup> In order to satisfy his wife's cravings, he tempted the monkey to go to the other shore of the river which abounded, as he described it, in mango and various other sweet fruits, and offered to carry the Bodhisat on his back. No sooner did Sumsumāra reach the mid-river with the Bodhisat on his back than he tried to drown him. The monkey knowing the cruel intention of Sumsumāra, devised, being a Bodhisat, at once a means of escape. "Thou must be a fool," he said, "to kill me thus, if thou really wantest my heart, which I left behind me hanging on a bunch of figs." Sumsumāra believing the monkey, carried him safely to the shore on the latter's promise that he would offer him his heart. The Bodhisat, reaching the shore there climbed a glomorous fig-tree (*udumbara-rukkha*) and seated in it, said: "Friend Sumsumāra, thou must have been a fool to believe that the heart of a living creature could be found hanging on a tree! Thou hast been deceived. Thou must fare as thou deservest. I for my part must be content with the figs within my reach and consider them to be of far greater worth than the mangoes and other sweet fruits that are on the other shore."

From this it is clear that the Bharaut sculpture depicts only the concluding portion of the story, i.e., the scene of the monkey admonishing Sumsumāra and bidding farewell to him.<sup>3</sup>

2. Plate XLIII, 4.—The inscription serving to label this sculpture is read and translated differently by General Cunningham and Dr. Hultsch:—

<sup>1</sup> Whether Sumsumāra (Sk. Sīsumāra) denotes a crocodile or a porpoise is open to dispute. Childers in his Pāli Dictionary p. 488, says, "The Sanskrit equivalent is said to mean the Gangetic porpoise, *Delphinus Gangeticus*. But the epithet 'child-killing' though perfectly appropriate to a crocodile, can surely not be applied to any sort of *Delphinus*." In both the Pāli and the Sanskrit versions, Sumsumāra speaks of his species as aquatic animals (*Jalagocarā*). But seeing that the latter version says that the being used to "come on the shore," one cannot help thinking that it was of a crocodile or alligator species. In one place of the story the animal is distinctly called a *kumbhila* or *kumbhiva*. As to the reasons for the Sumsumāra's fatal desire, the Pāli and the Sanskrit versions differ.

<sup>2</sup> According to the Pāli version, the reason was that she was then with child and according to the Sanskrit version that she tried to prevent friendship between the monkey and her husband.

<sup>3</sup> The original fragment is not available for reproduction. The photograph given in Cunningham is faded and does not yield a good reproduction. In order to test the probability of the author's conjecture independently, a professional draftsman has been asked to prepare an outline drawing of the photograph, without any explanation to him of the purpose. It will be seen that his copy shows that the monkey, to him, is not in the act of eating a fruit.

C. "Miga samādaka chetiya."

"Dear and Lions eating together Chetiya." (?)<sup>1</sup>

H. "Miga-samadaka(m) chetaya."

"The chaitya which gladdens the antelopes."<sup>2</sup>

The sculpture itself is thus described by Cunningham :  
"In the middle of the bas-reliefs there is a tree, which must be the Chaitya mentioned in the label. Seated around are two lions and six deer living most amicably together."<sup>3</sup>

It is difficult to ascertain whether the two up-lifted animal heads to the left of the six deer around the tree in the middle of the bas-reliefs are those of two lions, or of two tigers, or of a lion and a tiger. But it seems certain that the sculpture under discussion depicts the scene of a Buddhist version of a story known as Vṛaggha-Jātaka (No. 272). The story relates that the Bodhisat was once born as a tree-spirit in a grassy woodland. Not far away was a flowerless big tree where another spirit took his abode. In that grassy woodland lions and tigers lived, killing and devouring the deer, who found there a pleasant feeding-ground. In fear of the lions and tigers men did not venture to enter the woodland. But the woodland became so full of offensive smell that it was unfit for a spirit to dwell in. Seeing that the lions and tigers were the cause of such a state of things, the spirit living afar conceived a plan to drive them away and actually did so in spite of the Bodhisat's wise counsel that such a hasty step should not be taken, as that would ultimately serve to drive also themselves away. Now, as the woodland was no longer visited by the lions and tigers, men came in great numbers to cut down the trees and clear the jungles, with the result that the abodes of the tree-spirits themselves lay open to danger. The spirit who acted so rashly tried to avert the danger by bringing back the lions and tigers who flatly declined to return. Within a few days the trees were cut down and the jungles cleared up, compelling the spirits to shift elsewhere. Here closes the commentary or later prose version of the story. The supplication of the spirit asking the animals driven away to come back is embodied in a verse, quoted from the Canonical Jātaka-Book. The verse itself contains no reference to the lions.<sup>4</sup> In all likelihood, the sculpture follows a prose version

Now coming back to the inscription, it would seem that

<sup>1</sup> The Stūpa of Bharhut, p. 131. At page 94, we have another reading—"Migasamadika chetiya."

<sup>2</sup> I.A., Vol. XXI, p. 228. As regards *chetaya*, Hultsch says that *a* is a clerical mistake for *i*.

<sup>3</sup> The Stūpa of Bharhut, p. 94.

<sup>4</sup> Fausböll's Jātaka, II, p. 358 :—

*Etha vyagghā nivattavho paccametha mahāvanam,  
Mā vanam chīndi nivaggham, vyagghā mā hesu nibbanā ti.*

Cunningham's rendering is much nearer the mark. In interpreting it in the light of the aforesaid story, I can offer three alternative renderings. One, taking the word *miga* in its wider sense to mean animals in general, and two, taking it in its narrower sense to mean deer

1. Taking *miga* in the wider sense: "the chaitya is an animal feeding-ground."

2. Taking *miga* in the narrower sense: (a) "the chaitya in a feeding-ground of deer"; (b) "the chaitya in (a woodland, where) deer were eaten."

3. Plate XLV, 3.—The sculpture is not furnished with an inscription. The scene is thus described by Cunningham: "A sage, with his right shoulder bare, is seated on a *morha*, with his right leg raised, in the Indian fashion, and his left foot resting on a footstool. In the middle stands a female, who is apparently arguing with the sage, as both have their right forefingers raised as if addressing each other. To the right a female is leaving the scene. There is nothing to attract special attention in this sculpture, save perhaps the simple dressing of the women's hair, which is merely combed down the back of the head and fastened in a knot behind the neck."<sup>1</sup>

I think General Cunningham is not quite right in taking the departing figure to be a female.<sup>2</sup> The male figure in front of the female in the middle is not perhaps seated on a *morha* but on a seat looking like a bedstead or a couch. The female has her left hand placed on her waist-cloth covering the lower part of her abdomen, which is very prominent, while she holds a fan-like object in her right hand stretched out towards the male. She looks as if eager to explain some important matter to him, but he does not care even to look at her and the expression of his right hand suggests that he is not convinced of the truth of her story, or that he is not willing to believe her. If all these conjectures be right, the scene can be rendered thoroughly explicable in the light of the first part

<sup>1</sup> The Stûpa of Bharhut, p. 102.

<sup>2</sup> The mere representation of hair combed down the back of the head and fastened in a knot behind the neck cannot be regarded, according to the Bharhut convention, as the characteristic of a female figure. Such a way of dressing the hair is not peculiar to women. See, for instance, Cunningham's Plates XLVII, 3, XLVIII, 4. The prominence of the bust is simply due to the leaning of the upper part of the body giving a glimpse of the front part through the arm-pit. Cunningham's Plate XXX, 3, contains a male figure with prominent bust accountable for in the same way. The fundamental characteristics of female figures at Bharhut are two: (1) that they wear an ornamental head-covering in cases where a turban is not used; (2) that they invariably wear both bangles and anklets, while a belt or girdle, twofold, threefold, fourfold, fivefold or sixfold, hangs over the hip instead of being tied round the waist. If these distinctions are applied as tests, the balance of judgment is on the side of the figure in question being a male.

of the Kusa-Jātaka (No. 531), describing the circumstances of the birth of Prince Kuśa.

The story relates that, long ago, the subjects of king Okkāka or Ikṣvāku of the Malla country, were very anxious for him to leave at his death a descendant to continue his line. Happy and prosperous as they all were under his rule, they could not be satisfied with the idea that he should not have a son born to him before his death. The king, who was always bent upon doing all that he could to please his subjects, gladly consented to try all rightful means, in accordance with the rules of ancient morality, to obtain the birth of a son even sending out his chief queen Silavatī into the streets for a week as a solemn act under religious sanction (dharma-nātaka).<sup>1</sup> By the power of the queen's virtue the abode of Sakka, king of the gods, began to glow, and Sakka, determined not to allow the virtuous queen to be molested by the mob, appeared in the disguise of an aged Brahmin, carrying her off as she was let out.<sup>2</sup> Sakka transported the queen in an unconscious state to his abode, the heaven of the Thirty-three, where he granted her a boon of two sons, one of whom would be ugly but wise, and the other handsome but a fool. The queen preferred to have the ugly son first. Sakka presented her with a piece of *kusa* grass, a heavenly robe and sandal wood, the flower of the coral tree and a *Kokanada* lute. Thereafter she was transported back to the king's bed-chamber and laid down on the same couch with the king. Sakka, disguised of course as the aged Brahmin, touched her person with his thumb and at that moment a god from the heaven of the Thirty-three descended and took birth in her womb. He then straightway went back to his heaven. The wise queen knew that she had conceived. The king on waking was surprised to see her and asked who had brought her there. He could not believe when she told him that she was brought there by Sakka. "With my own eyes," he exclaimed, "I saw an aged Brahmin carry you off. Why do you try to deceive me?" She first showed him the *kusa* grass as a proof, which failed to convince him. But on being shown her heavenly robes, he believed her. But he was really concerned about her motherhood and was exceedingly glad when the queen assured him of her maternity.<sup>3</sup> Now, examined in the

<sup>1</sup> The story records three successive attempts. First the dancing girls were turned out; then the court-ladies; lastly the chief Queen herself. The details are extraordinary but difficult to render with grace or even the original naivety.

<sup>2</sup> With ribald details in the original after the style of Shakespeare's witticisms.

<sup>3</sup> The immorality of the story as a *conte drolatique* need not prejudice the reader. In most of the Bharaut sculptures, the Buddhist Birth-stories are represented by parts, and the parts chosen by the

light of this story, the bas-relief can be explained thus: the departing figure, a male or a female, is Sakka in disguise, quickly returning to his heaven; the male figure seated on a couch is King Okkāka in an attitude suggestive of disbelief in what the woman before him is telling him; this woman is no other than his chief Queen Silavatī, who holds in her right hand a symbol perhaps round-folded heavenly robes or a fan of sandal wood, which Sakka had given her and shows it to the king who cannot believe that she was brought back to his bed-chamber by Sakka; the prominence of the lower part of her abdomen symbolises her maternity and the position of her hand indicates that she is reassuring the king about this very matter.

There is a Sanskrit version of the story of Kuśa in the *Mahāvastu*,<sup>1</sup> which differs in many important details from the Pāli. As the Bharhut sculpture follows an earlier version similar to the Pāli, the Sanskrit version need not be considered here.

4. *Plate XLVII, 7*.—The inscription attached to this sculpture is read and rendered differently by General Cunningham and Dr. Hultzsch:—

C.—“*Dadani Kamo chakamo.*”

“Punishment of works Region”(?)

“that is, the place of punishment, or Hell.”<sup>2</sup>

H.—“*Dadanikamo chakamo.*”

“The enclosure (called) *Dandanishkrama.*”(?)<sup>3</sup>

Cunningham describes the scene as follows:—

“In this very curious scene an altar or throne occupies the middle place, behind which are four lions with gaping mouths, and to the right five men standing in front of a sixth, who sits on the ground to the left in a contemplative attitude, with his head leaning on his left hand. In front are two gigantic human heads, with a human hand between them, and towards the throne or altar a bundle of faggots burning. I conjecture that this scene represents one of the 16 Buddhist hells, or places of punishment.”<sup>4</sup>

I take it that the scene is not that of a Buddhist hell but that of burning or cremation. The faggots burning represent a funeral pyre, while two human heads with hideous looks are symbols representing the ogres. Thus the place is a *śmaśāna*

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sculptor are not necessarily moral ones. For instance, the story of *Isisringiya* or *Risyaśringiya* is depicted only by the representation of the first part relating to the birth of the ascetic from a doe.

<sup>1</sup> *Mahāvastu*, Sénart's Ed. II, pp. 420 ff. See Rājendralāla Mitra's ‘Sanskrit Buddhist Literature of Nepal,’ pp. 142 ff.; also, pp. 110 and 315.

<sup>2</sup> The *Stūpa* of Bharhut, p. 130.

<sup>3</sup> I.A. Vol. XXI, p. 227.

<sup>4</sup> The *Stūpa* of Bharhut, p. 94.

used both as a 'cremation ground,'<sup>1</sup> where dead bodies were burnt and as a 'charnel-field,'<sup>2</sup> where dead bodies were thrown away unburnt. If these conjectures are sound, I am sure that the scene can be rendered intelligible and the remaining figures explained by the aid of the Pāli *Uruga-Jātaka* (No. 354).<sup>3</sup> The story as narrated in Fausbøll's edition of the second *Jātaka-commentary*—the *Jātakatthavaṇṇanā*—may be summarised as follows:—

The Bodhisat was once born as a Brahmin. He lived happily in a village near Benares with his wife, son, daughter-in-law and two daughters. One day he went with his son to work in his plough-land. While his son was burning the weeds heaped up in one place, he was bitten by a poisonous snake and died then and there. The Bodhisat did neither cry nor lament, although this mishap occurred before his eyes, knowing such was an inevitable end of the body. When the news reached the female members of his family, none of them wept. The dead body was duly carried to the cremation-ground and consigned to fire. It was a great wonder that while the body was being cremated, none of the Bodhisat's family including himself was seen to shed any tear. This wonderful power of self-restraint made the throne of Sakka glow. Forthwith Sakka, king of the gods, came down to the cremation ground, and after uttering the lion's roar stood on one side. He interrogated the Bodhisat and the four female members of his family, asking each of them to tell him why it was they had not wept. It is said that the replies received from them satisfied Sakka, who was so pleased with their attitude that he filled their house with riches beyond measure and departed. Here the story ends.

We can well understand that the five human figures to the right of the funeral pyre are the five members of the Bodhisat's family including himself. The human figure to the left is Sakka, while the four lions with gaping mouths, behind the altar, symbolise the lion's roar preceding Sakka's appearance. The man standing just opposite to Sakka is the Bodhisat, behind him stands his wife, the figure behind her is his daughter-in-law, and two human figures behind the altar, in the same line with the lions, are his two daughters.<sup>4</sup> The altar

<sup>1</sup> *Dagdhā-cūṭā, ālāhana or ādāhana.*

<sup>2</sup> *Anagnīdagdhā cūṭā, sīvathikā, āmaka-susūna.*

<sup>3</sup> The canonical or poetic version of the story is contained in the *Petavatthu*. See *Uruga-Peta-vatthu*.

<sup>4</sup> The only serious objection that can be raised is that all the human figures wear turbans, which, according to the general Bharaut convention, is the characteristic of males. But this may be due to the sculptor's oversight, or there may have been some very special reason for providing even the female figures with a headgear in the shape of turbans. A conspicuous instance of a female figure wearing a turban is offered by Cunningham's Plate XLVIII, 11.

is designed perhaps as a protection of fire against the wind and signifies symbolically, as explained in a Vedic hymn, a dividing line between the living and the dead.

As regards the inscription, I believe that Dr. Hultzsch's reading—"*Dadanikamo chakamo*" is quite correct. But I must confess my inability to make any meaning out of his rendering—"the enclosure (called) Dandanishkrama." General Cunningham's rendering—"Punishment of Works Region" does not give much light either. However, both the translators seem to agree in equating *dada* or *dāda* with *danda*, and differ regarding the division of *dadānikamo*:

C.—*dadānikama* = *dadani* + *kama* = *dandani* + *karma*

H.—*dadānikama* = *dada* + *nikama* = *danda* + *nishkrama*.

In interpreting the inscription in the light of the story quoted, I am inclined to accept Hultzsch's division of the word and to equate *dada* with a word like *dr̥ḍha*, Pāli *dalha*, meaning strong, difficult. That is to say, I am inclined to render the inscription:

"The walk wherefrom escape is difficult." <sup>1</sup>

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<sup>1</sup> The Bharaut expression *dadānikamo* exactly corresponds to the Pāli *dalhanikkamo*, an adjective used adverbially in the Sutta-Nipāta, v. 68: *dalhanikkamo eko care khaggavisāṇakappo*. Here *dalhanikkamo*, Sk. *dr̥ḍhaniskramah*, means 'effecting a forcible escape.' "*Dalho nikkamo assāti dalhanikkamo*" (Sutta-Nipāta-Commentary). As for *dada*=*dalha* and *dr̥ḍha* (*ḍ* standing for *lh* and *ḍh*), compare *Virūḍako*=*Virūḷha*, *Virūḍhaka*. The Mahāvastu version of the verse reads *dr̥ḍhavikramā*. The idea of *nikkama* is conveyed in the expression *abhinikkhamitvā* of the Sutta-Nipāta v. 64 and *abhiniskramitvā* of the Mahāvastu I., p. 358, v. 4.

### 31. Notes On Five Bharaut Epithets.

By B. M. BARUA, M.A., D.LIT., (Lond.)

Among the names of donors of different parts of the railing of the Bharaut Stūpa we come across a few epithets that have undoubtedly a deep significance in the literary and ecclesiastical history of the Buddhists. Of these, the following five are selected here for comment: (1) *Petaki*, (2) *Pamcanekāyika*, (3) *Bhānaka*, (4) *Satupadāna*, and (5) *Bodhicaka*. The late Professor Rhys Davids was the first to indicate the bearing of the first two of these epithets on the development of the Buddhist canonical literature.<sup>1</sup> A critico-philological study of the meaning of these epithets with reference to their full significance in the literary as well as the ecclesiastical history of the Buddhists is yet a desideratum. The purpose of this paper is to show the fruitfulness of a study on these lines. To begin with *Petaki*:—

1. *PETAKI*.—This occurs in its genitive form in the Votive Label—*Aya-Jātasa petakino suci dānam*<sup>2</sup>. This is not to be found as a personal epithet either in Buddhist literature or in any other Buddhist inscription hitherto discovered.

*Petaki* is derived from *Pitaka* or *Petaka*, and means, as Prof. Rhys Davids suggests, one who knows the Pitaka by heart (Buddhist India, p. 167). *Pitaka* or *Petaka* is a Buddhist technical expression signifying a definite literary redaction of Buddhist doctrine considered as closed, i.e., the Buddhist Canon. The *Pitaka* is, according to Prof. Rhys Davids, the traditional statements of Buddhist doctrine as contained in the *Sutta Pitaka*. This is not necessarily so. Let us take, for instance, the expression *Petakôpadesa* used as the title of an exegetical treatise on the general teachings in the *Pitaka* or *Pitaka* literature. The canonical passages and verses quoted therein can be mostly traced now in the books of *Sutta* and *Abhidhamma Pitakas*. The *Petakopadesa* expressly quotes passages from the *Ekuttaraka* (the *Ekuttara* or *Āṅguttara Agama* or *Nikāya*), and the *Samyuttaka* (the *Samyutta Agama* or *Nikāya*). The title *Pitaka* of the *Petakôpadesa* may either mean something of the *Pitaka* or something relating to the *Pitaka* in a collective sense. *Tepitaka* or *Tipitaka* is the commonest expression in Buddhist inscriptions and literature. The *Petakôpadesa*, be it remembered, contains, like its companion

<sup>1</sup> Buddhist India, p. 167.

<sup>2</sup> Cunningham's Stūpa of Bharhut, p. 141, RI. 41, Plate LVI, reads *sepetakino*. Hultzsch, No. 134. Lüders, No. 856.

work the *Netti-Pakarana*, a treatment of the scientific method of exegetical exposition of Buddha's doctrine in its two-fold aspect—the linguistic and the connotative-denotative, the formal and the material. The term *Pitaka* seems to have been derived from the common parlance in which it meant a basket for carrying earth (*matikā-bhājana*), cf. *kuiddālapitakam*, spade and basket.<sup>1</sup> Its alternative form *Petaka* corresponds to *petaka*, *petikā* or Bengali *pedā*, meaning some kind of a box or chest (*mañjūsā*). In the Buddhist technical sense, too, the term *Pitaka* or *Petaka* is taken metaphorically to mean *pariyatti bhājana* or *pariyatti-mañjūsā*, with this difference, however, that here it stands for both the container and the contained.<sup>2</sup> The suggested metaphors are quite appropriate from the Buddhist theological point of view, according to which Buddhist doctrines or traditions as rehearsed, collected and fixed at the first Council, were transmitted (*ābhata*) or orally handed down (*mukhapāthavasena*) from teacher to teacher<sup>3</sup>, just in the same way that dug up earth is carried in baskets from head to head till it is deposited and protected in the shape of a mound. It stands to reason to say that *Pitaka* as a technical term is used exclusively by the Buddhists, but one must repudiate the suggestion that it was applied by them to denote only a part of their literature, namely, the canonical part. The Buddha himself, as well as some of his immediate disciples, are said to have used it with reference to the Vedic texts and traditions,<sup>4</sup> orally handed down in different schools with the prevailing belief 'so these were', 'so these were' (*anussavena itiha-itiha-param-parāya pitaka-sampadāya*).

2. *PAMCANĒKĀYIKA*.—This occurs in the votive label *Budharakkhītaṣa Pamcanekāyikasa dānam*<sup>5</sup>, as an epithet of the donor Buddhārakkhita who is apparently a Buddhist householder. It also occurs as an epithet of the monk-donor Devagiri in the Sanchi Buddhist Stūpa I inscription, Lüders No. 299.

*Pamcanekāyika* or *Pañcanaikāyika* is derived from *Pañcanikāyā*, and means one who is conversant with, i.e. knows by heart, the Five Nikāyas (*Buddhist India*, p. 167). *Pañ-*

<sup>1</sup> *Atthasālinī*, p. 20. Cf. *Kodāl-peurgā* or *peurgā-kodāl* of the Chittagong dialect.

<sup>2</sup> *Atthasālinī*, p. 20.

<sup>3</sup> *Ibid.* p. 32: *Kenābhataṇṭi? Ācariya-paramparāya*.

<sup>4</sup> *Majjhima Nikāya*, II. Canki-Sutta: *mantapadīṃ: Mantā yeva mantapadāṃ, Vedo'ti attho. Itiha-itiha-paramparāyadīṃ evaṃ kira, evaṃ kirāti paramparabhāvenā āgatanti. Pitaka-sampadāyadīṃ vacanasāṅkhatasampattiyaṃ sāvitti ādīhi chandabandhehi pavattabandhehi sampādetvā āgatanti* (*Papañca Sūdanī*, III. Siamese Ed.). In the *Sandaka-Sutra* (*Majjhima*, p. 520) Ananda repudiates by these expressions the traditional method of a Vedic teacher (*anussavika*).

<sup>5</sup> *Stūpa of Bharhut* p. 142. RI. 52, Plate LVI. Hultzsch, No. 141. Lüders, No. 867.

*canikāya* occurs in the *Vinaya Cullavagga*<sup>1</sup> as a collective designation for one of the two divisions of the Buddhist Canon therein recognised, the other division being represented by '*Ubhato-Vinaya*.' The *Milinda* quotes passages from the books of the *Sutta-Piṭaka* bearing such titles as *Dīgha-Nikāya*, *Majjhima-Nikāya*, *Samyutta-Nikāya*, and the rest. In Buddhaghosa's commentaries,<sup>2</sup> on the other hand, the expression signifies not only the five well-known collections of Buddha's discourses or dialogues enumerated as five classical divisions of the books of the *Sutta-Piṭaka* but also a general five-fold division of the entire Buddhist Canon, the *Khuddaka-Nikāya* including, over and above the usual 12 or 15 *Sutta* books, all the books composing the *Vinaya* or the *Abhidhamma Piṭaka*. Except in the sense of a sect, school or denomination, the term *Nikāya* is not at all found in use among the Buddhists. From this, one may be naturally led to suppose that *Nikāya* in the sense of a canonical division is a technical term exclusively used by a particular Buddhist sect or school, namely, the *Theravāda* or *Sthavira*. The expression found in the literature of other sects and schools corresponding to Pāli *Nikāya*, such as that in the *Divyāvadāna*, a Sarvastivāda work, is *Āgama*. Even in the Pāli discourses ascribed to the Buddha himself, the expression *Āgama* is often met with, no doubt in the sense of a floating body of Buddhist literary traditions either with their twofold division *Dharma* and *Vinaya*, or with their triple division *Sutta*, *Vinaya* and *Mātikā*.<sup>3</sup> Whatever are the later Buddhist explanations of these expressions, they seem to have been used with the express object of indicating a traditional character of the original body of Buddha's doctrine.<sup>4</sup> Thus one need not be surprised that in the *Dīpa-vaṃsa* account of the proceedings of the first Buddhist Council, the *Dhammasaṅgaha* is otherwise called *Āgama-Piṭaka*. What is the special significance of *Nikāya* applied as a designation for a Canonical division? Buddhaghosa says that *Nikāya* in its ordinary usage means *saṃūha* and *nivāsa*, and that in this respect there is no difference between its common and technical sense. For instance, the *Dīgha-Nikāya* means the group, aggregate, set or receptacle of the long discourses.<sup>5</sup> In the earlier Jaina and Buddhist texts, *Nikāya* appears to have been used as a biological expression, meaning

<sup>1</sup> *Cullavagga, Vinaya-Piṭaka*, II, p. 287.

<sup>2</sup> *Samanta-Pāsādikā*, Ceylonese Ed. p. 8. *Atthasālinī*, pp. 17-18; *Sumaṅgala-Vīlāsini*, Siamese Ed. I. pp. 20-33.

<sup>3</sup> Cf. *Bahussutā, Āgādāgamā, Dhammadharā, Vinayadharā, Mātikā-dharā*.

<sup>4</sup> *Sumaṅgala-Vīlāsini*, II, Siamese Ed., p. 216 f.

<sup>5</sup> *Atthasālinī*, p. 25: "*Dīghapamāṇāṇaṃ suttānaṃ saṃūhato nivāsato ca, saṃūha-nivāsā hi nikāyo ti vuccatī*."

a particular class, type or species of living beings, cf. *cha-jīva-nikāya*,<sup>1</sup> a technical term in use among the followers of Pārśvanātha, denoting six divisions of living beings, those possessed of one sense, those having two senses, etc. In the Ājīvika phraseology, the expression *cha-jīvanikāya* was replaced by *chalābhijāti*<sup>2</sup> or *saṭjīva-varṇā*<sup>3</sup> and in the Jaina phraseology by *cha-lesiyā*, meaning the living beings of six mental types. In Buddha's discourses<sup>4</sup> and in Pāṇini's *sūtras*,<sup>5</sup> the term *Nikāya* has a similar biological significance. According to Buddha, a *jāti* or *nikāya* denotes a self-contained class of beings, two *jātis* being mutually exclusive (*aññamaññāhi jātiyo*).<sup>6</sup> Taking our cue from this, one must understand that when *Nikāya* came to be applied by the Buddhists to their canonical books and divisions, they intended to signify that Buddha's doctrine was no longer in a fluid condition but had assumed definite shapes and character, each division of it having an independent position of its own in the whole body of the literature.

3. *BHĀNAKA*.—This occurs in many Votive labels at Bharaut, Sanchi and other places. Cunningham wrongly takes it to be the name of a place.<sup>7</sup> Hultsch and Lüders render it as 'the preacher.'<sup>8</sup> But *Bhānaka* does not technically denote a preacher. Preaching is rather the function of a *kathī* or *kathika*. The essential duty of a *Bhānaka* consists in the recitation or rehearsal of the sacred texts with a view to preserving and handing them down by oral tradition. In Buddha's own words we meet with two expressions *Vādī*, meaning the upholder of an opinion, the propounder of a view, and *kathī* or *kathika*, denoting a preacher or an instructor. According to tradition, the institution of *Bhānakas* was of a somewhat later origin. The earliest tradition regarding the rise of the *Bhānakas* is to be found in Buddhaghosa's *Sumaṅgalā-Vilāsinī*. This tradition is repeated in a much later work—the *Mahābodhivaṃsa* with a slight variation. According to this tradition, it so happened that during the session of the first Buddhist Council as soon as the *Vinaya* texts were compiled, the preservation of the *Vinaya* traditions and texts by regular recitation was entrusted to the care of the Venerable Upālī; when in the course of rehearsal of the *Dhamma*, the *Dīghāgama* or *Dīgha-Nikāya* came to be compiled, the

<sup>1</sup> *Āyaramga Sutta*, P.T.S. II. 15-16.

<sup>2</sup> *Dīgha-Nikāya*, I. p. 53; *Anguttara*, III. pp. 383-384; *Sumaṅgalā-Vilāsinī* I, p. 162.

<sup>3</sup> *Mahābhārata* XII, 279-32.

<sup>4</sup> *Samyutta*, III. 152: "Nāhaṃ bhikkhave aññaṃ ekanikāyaṃ pi samanupassāmi evaṃ cittaṃ yathayidaṃ tiracchānagatā pāṇā."

<sup>5</sup> *Kāśika* on Pāṇini III, 3. *Āthasālīnī*, p. 25. *Paramatthajotikā*, I, p. 12.

<sup>6</sup> *Sutta-Nipāta*, V. 601.

<sup>7</sup> *Stūpa* of Bharhut, p. 134.

<sup>8</sup> Hultsch No. 45. Lüders No. 738. Cf. Höernle No. 11.

preservation of this text was entrusted to the care of the Venerable Ānanda ; in a similar way the preservation of the *Majjhima-gama* or *Majjhima-Nikāya* was entrusted to the care of the disciples of Sāriputta, that of *Samyuttāgama* or *Samyutta-Nikāya* was entrusted to the care of the Venerable Kassapa, that of the *Ekkuttarāgama* or *Āṅguttara-Nikāya* was entrusted to the care of the Venerable Anuruddha. Thus one is to conceive the rise of five Schools of Bhānakas, to wit, *Vinaya-bhānakā*, *Dīgha-bhānakā*, *Majjhima-bhānakā*, *Samyutta-bhānakā* and *Āṅguttara-bhānakā*. But curiously enough, throughout Buddhist literature we nowhere meet with the expression *Vinaya-bhānakā*, while in Buddhaghosa's commentaries the views of the *Dīgha-bhānakas* and the rest are quoted by name and discussed. We have even mention of *Dhammapada-bhānakā* in the *Atthasālinī*.<sup>1</sup> Buddhaghosa is really reticent about the origin of *Khuddaka-bhānakā*, though he expressly states that the *Khuddakāgama* or *Khuddaka-Nikāya* consisted of the books of the *Vinaya* as well as the *Abhidhamma Piṭaka* in addition to the 12 or 15 books belonging to the *Sutta Piṭaka*.<sup>2</sup> He does not explain why, if the *Vinaya* books were comprised within the *Khuddaka-Nikāya*, the preservation of the *Vinaya* traditions was separately placed in charge of Upāli. Moreover, in the *Mahābodhivamsa* we read that the *Khuddaka-Nikāya* comprising the books of the *Abhidhamma Piṭaka* and some books of the *Sutta Piṭaka* was jointly rehearsed by the *Sthaviras* of the First Council and that the preservation of these texts was committed to the care of them all.<sup>3</sup> In a passage of the *Milinda*<sup>4</sup> we have among the citizens of the ideal *Dhamma-nagara*, the mention of :—

1. *Suttantikā*—Masters in the *Suttanta*, i.e., in the *Sutta Piṭaka* ;
2. *Vinayikā*—Masters in the *Vinaya*, i.e., in the *Vinaya Piṭaka*
3. *Ābhidhammikā*—Masters in the *Abhidhamma*, i.e., in the *Abhidhamma Piṭaka* ;
4. *Dhammakathikā*—The preachers of the *Dharma* ;
5. *Jātaka-bhānakā*—The repeaters of *Jātakas* ;
6. *Dīgha-bhānakā*—The repeaters of the *Dīgha-Nikāya* ;
7. *Majjhima-bhānakā*—The repeaters of the *Majjhima-Nikāya* ;
8. *Samyutta-bhānakā*—The repeaters of the *Samyutta-Nikāya* ;
9. *Āṅguttara-bhānakā*—The repeaters of the *Āṅguttara-Nikāya* ;
10. *Khuddaka-bhānakā*—The repeaters of the *Khuddaka-Nikāya*.

<sup>1</sup> *Atthasālinī*, p. 18.<sup>2</sup> *Sumāṅgalā Vilāsinī* I. p. 12f.<sup>3</sup> *Mahābodhivamsa* p. 92.<sup>4</sup> *Milinda-Pañha*, pp. 341-342. S.B.E., Vol. XXXVI p. 231.

Two facts are quite clear from this passage, and both are of great importance. First, that the function of a *Dharma-kathika* was different from that of a *Bhānaka*. Secondly, that in the time of the Milinda there were in the country at least six schools of repeaters, the repeaters of *Jātakas* and those of the five *Nikāyas*, which clearly proves that there was a separate collection of commentary-*Jātakas* apart from one included in the *Khuddaka-Nikāya*. The first four *Nikāyas*, most of the *Vinaya* books and some books of the *Khuddaka-Nikāya* and the *Abhidhamma Piṭaka* contain, besides the chapter arrangement of contents, divisions according to *Bhānavāras* or portions recited at a time. We can imagine that the *Bhānakas* represented in institutions for popular instruction persons noted for their power of memory and extemporizing. The institution of *Bhānakas* has continued and survives till to-day in India and other eastern countries, where one can meet a number of persons getting things by heart for the purpose of recitation without any attempt to grasp their meaning.

4. *SAṬUPADĀNA*.—This curious epithet occurs but once in the Votive label—*Bhadata-Budharakkhitasā Saṭupadānasa dānam thabho*.<sup>1</sup> Like *Petaki*, this is not to be found anywhere in Buddhist literature. Cunningham suspected it to be the name of the locality to which the donor belonged. According to Hultzsch's rendering, *Saṭupadāna* means 'one who is versed in science.' He apparently gives no reasons, though his interpretation seems to be nearer the mark. The epithet appears to be a monumental Prakrit counterpart of the Pāli *Satipatthāna* or *Satipatthānika*, and the Sk. *Smṛtyaupasthāna* or *Smṛtyaupasthānika*. If so, it may be taken to mean 'a person practising *Satipatthāna*,' or 'one adept in the Buddhist practice and experiences of mindfulness.' There are difficulties in accounting for the phonetic change of *Satipatthāna* or *Smṛtyaupasthāna* to *Saṭupadāna*. But there is no other better suggestion to offer in order to make the meaning of the epithet intelligible. If the latitude claimed be accepted, one can easily understand that at the time when the Bharaut railing was set up (2nd or 1st century B. C.), there were Buddhist monks who were noted for the *Jhāna* practice of *Satipatthāna* and bore epithets to that effect, nay, one can suppose that a mystical sect among the Buddhists was in the making or had already sprung into existence.

5. *BODHIKAKA*.—This is another curious epithet that occurs in the Bharaut Votive Label—*Samghamitasa Bodhikakasa dānam*.<sup>2</sup> Hultzsch and Lüders incline to interpret it in

<sup>1</sup> Stūpa of Bharhut p. 138, Pl. 80, Plate LV. Hultzsch No. 90. Lüders No. 792.

<sup>2</sup> Stūpa of Bharhut p. 142, Pl. 51, Plate LVI Hultzsch No. 143. Lüders No. 866.

the sense of 'a symbol for *Enlightenment*.' They go so far as to indicate that the inscription was meant as a label for a sculptural representation of the *Bodhicakra* which is now missing. Cunningham takes it to be the name of the place of which the donor was the inhabitant. But he also suggests that there may have been a *Bodhicakra* as well as a *Dharmacakra* symbol. Judging by the general grammatical construction of the votive labels, one cannot but take *Boddhicaka* as an epithet used in apposition with *Samghamita*. The precise significance of the epithet is not quite clear. It would be interesting if it could be shown that *Bodhicaka*, as suggested by Cunningham, is used in contradistinction to *Dharmacaka*. In that case, one might conjecture that at the time of the construction of the Bharaut railing, there were two distinct symbols in use among the Buddhists, one, namely, the *Bodhicakra*, characterising a tendency towards the ideal of Buddhahood, and the other, namely the *Dharmacakra*, characterising the tendency towards the ideal of Discipleship. The rendering given by Hultsch and Lüders is highly suggestive and does commend itself to our ready acceptance, provided that it can be shown that the label is attached to an actual symbolical representation of *Bodhi* on the Bharaut railing.



## 32. Why did not Alexander cross the Beas ?

By H. C. RAY, M.A.

The invasion of India by Alexander has been discussed by many eminent Indologists. Dr. V. A. Smith in his *Early History of India* and more recently Mr. E. R. Bevan in the *Cambridge History of India* have exhaustively dealt with the subject. Dr. H. C. Ray Choudhury also in his *Political History of Ancient India* has fully discussed the invasion and has arrived at some similar conclusions as those of mine. In this paper, however, I shall confine myself to the question why Alexander turned back his steps from the bank of the Beas.

In the spring of B.C. 334 Alexander crossed the Hellespont with an army of about 30,000 foot and 4,000 horse.<sup>1</sup> The battle of Arbela<sup>2</sup> in the spring of 331 B.C. virtually brought the vast Achaemenian empire at the feet of the Macedonian conqueror.<sup>3</sup> The Persian empire extending from the Ægean Sea to the borders of India seemed to crumble to pieces at the magic touch of a few thousand Greek soldiers. Its enormous resources and millions of soldiery did not avail.<sup>4</sup> There can be no better proof of the inherent weakness of the Persians when compared with Greek discipline, bravery and leadership.

Thus the tide of Persian invasions into Hellas which began with the expedition of Mardonius in 492 B.C. and reached its climax in 480 B.C. by the capture and burning of Athens was reversed. But Alexander was not satisfied. His ambition grew with his success. He wanted to conquer the whole of Asia and surpass the mythical exploits of Dionysos, Heracles, Semiramis and Cyrus by effecting the conquest of India.<sup>5</sup> Accordingly in the spring of the year 327 B.C. he crossed the Hindukush or the Indian Caucasus and appeared on the N.W. frontier of this country. Alexander received reinforcements at various stages of his march and on the eve of his invasion of India his army as estimated by Plutarch was 120,000 infantry and 15,000 cavalry.<sup>6</sup> The invasion of India is said

<sup>1</sup> According to some the figures were 43,000 foot and 5,000 horse. See Bernadotte Perrin's *Plutarch's Lives*, Vol. VII, p. 261.

<sup>2</sup> Plutarch informs us that the battle was fought at Gaugamela and not at Arbela as most writers state, *Ibid*, p. 317.

<sup>3</sup> *Ibid*, p. 327.

<sup>4</sup> Plutarch informs us that Darius came to meet Alexander at Gaugamela with a million men. *Ibid*, p. 315.

<sup>5</sup> McCrindle's *Ancient India, its invasion by Alexander*, pp. 70, 82, 124, 173, 246.

<sup>6</sup> Bernadotte Perrin's *Plutarch's Lives*, Vol. VII, p. 411. I see no

to have proved fatal to the reputation of not only mortals but also of gods. This increase in the strength of his forces therefore was perhaps considered necessary by the difficult nature of the operations which confronted him.

Alexander thus commenced his invasion. He gradually fought his way to Ohind, crossed the Indus and the Hydaspes, defeated Poros and after crossing two other tributaries of the Indus arrived on the banks of the Hyphasis in September 326 B.C. This was the turning point in his invasion of India, for we are told by the historians of Alexander that his army mutinied and refused to proceed further. We are informed by Arrian that the reports about the Indians beyond the Hyphasis 'only whetted Alexander's eagerness to advance further, but the Macedonians now began to lose heart.'<sup>1</sup> The eloquence of Alexander, his threats and persuasions were only met with angry murmurs, groans or streaming tears.<sup>2</sup> The conduct of the Greek army really deserves enquiry.

What were the causes that worked so seriously on the morale of the Greek forces. We have seen that with an army which was less than one-third its present strength the Greeks had shattered the vast Persian army and its numerous hosts. Issuing from distant Macedon they had conquered nearly the whole of S.W. Asia and a fair portion of Africa and were now resting their arms on the bank of the Beas. It is probable that Alexander received this 'imperious check' because his army was war weary and homesick, so natural to a force warring in distant and strange lands. But was this the sufficient and only cause of the mutiny?

In his famous address to the soldiers on the banks of the Hyphasis Alexander remarks in one place—'I am not ignorant soldiers that *during the last days* the natives of this country have been spreading all sorts of rumours designed expressly to work upon your fears.'<sup>3</sup> What were these rumours? It was surely known to the soldiers that India was a difficult country to conquer which had on many occasions frustrated the attempts of not only human conquerors like Cyrus and Semiramis but also of mythical heroes and gods like Heracles and Dionysos. But these reports could not be spread specially *during the last days*. The rumours complained of must have been about the nations beyond the Hyphasis. Let us therefore carefully examine the reports about these people that reached the Greek camp on the Beas.

From Arrian we know that these nations 'were brave

reason why we should reject this statement of Plutarch and accept the guess of Dr. V. Smith that 'perhaps fifty or sixty thousand Europeans crossed the Hindukush with Alexander,' *Early History of India*, p. 49

<sup>1</sup> McCrindle's *Ancient India, its invasion by Alexander*, p. 121.

<sup>2</sup> *Ibid*, pp. 127 and 229.

<sup>3</sup> McCrindle's *Ancient India, its invasion by Alexander*, p. 223

in war and lived under an excellent system of internal government.<sup>1</sup> Curtius and Diodorus inform us that of all the nations beyond the Hyphasis the Gangaridae and the Prasi who dwelt on the farther banks of the Ganges were the most powerful. It was reported to Alexander that their king Agrammes (or Xandrammes) kept in the field for guarding the approaches to his country 20,000 cavalry and 200,000 infantry besides 2,000 four-horsed chariots, and, what was most formidable force of all, a troop of elephants which he said ran up to the number of 3000.<sup>2</sup> This information was secured from Phegeus,<sup>3</sup> King of a nation near the Hyphasis who had submitted to the invader. We are told that Alexander at first considered this information incredible and was only convinced when the *Pauravan* monarch assured him, that as far as the strength of the nation and kingdom was considered, there was no exaggeration in the reports. But why should Alexander who with an army one-third its present strength had crushed with ease the forces of Persia a million strong, distrust these statements and hesitate to oppose a king whose army after all was composed barely of two and a half lakhs of combatants. The point is cleared by the following statement of Plutarch.<sup>4</sup>

2 The battle with Poros depressed the spirits of the Macedonians and made them very unwilling to advance further into India. For as it was with the utmost difficulty they had beaten him when the army he led amounted only to 20,000 infantry and 2,000 cavalry they now most resolutely opposed Alexander when he insisted that he should cross the Ganges.<sup>5</sup>

3 We are further told by the same authority that 'the Kings of the Gandaritai and the Praisai<sup>6</sup> were reported to be waiting for him with an army of 80,000 horse 200,000 foot 8,000 war chariots and 6,000 fighting elephants. Nor was this an exaggeration for not long afterwards Androkottas who had by that time mounted the throne, presented Seleukos with 500 elephants and overran and subdued the whole of India with an army of 600,000 men'.<sup>7</sup> These statements are in perfect harmony with what the Purāṇas say about the strength and power of Ugrasena Mahāpadma and his family.<sup>7</sup>

<sup>1</sup> McCrindle's *Ancient India, its invasion by Alexander* p. 121.

<sup>2</sup> *Ibid.* pp. 221-22 and 281-82. According to Diodorus the number of elephants were 4,000.

<sup>3</sup> Dr. Sylvain Levi proposes to read it Phegelas which he translates by the Sanskrit word Bhagala *Ibid* p. 221 and p. 401: *Journal Asiatique* for 1890, p. 239.

<sup>4</sup> McCrindle's *Ancient India, its invasion by Alexander* p. 310.

<sup>5</sup> McCrindle has pointed out that the name of the river should be Hyphasis, *Ibid*, p. 310 n.

<sup>6</sup> *Ibid.*, see notes Cc and Dd, pp. 364-66.

<sup>7</sup> *Ibid.*, p. 310.

<sup>7</sup> Pargiter, *Kali Age*, pp. 23-26; Carmichael *Lectures*, 1918, pp. 84-86.

The statements of Plutarch are further corroborated by Diodorus Siculus who says that 'Among the southern countries the first under Kaukasos is India, a kingdom remarkable for its vast extent and the largeness of its population, for it is inhabited by very many nations among which the greatest of all is that of the *Gandaridai*, against whom Alexander did not undertake an expedition being deterred by the multitude of their elephants.'

Thus it seems clear that one of the causes of the mutiny on the Hyphasis was the terror struck in the Greek camp by the reports, which were far from exaggerated of the strength and prowess of the Nandas, the founders of the first Empire in India. But this was not the only cause. We have been already informed by Plutarch that the battle with Poros depressed the spirits of the Macedonians and made them very unwilling to advance further into India. This information from Plutarch helps us to elucidate another very important cause of the mutiny. When we compare the ease with which Alexander succeeded in demolishing the mighty Achaemenian empire with his difficult and sometimes desperate Indian campaigns and when we remember that these were directed not against the then only empire in India, viz. that of the Nandas but against petty tribal principalities and kings, we cannot but be struck by the bravery and martial vigour of the Indians as opposed to the true Asiatic weakness of the Persians. In the unequal struggle between a well-drilled Greek army with the resources of a vast empire at its back and captained by one of the best military leaders of the West and a number of small tribal principalities and princelings is it not surprising to see Alexander often incurring serious losses and once at least almost mortally wounded.<sup>2</sup> At Massaga even the women taking the arms of the fallen fought side by side with the men to repel the treacherous attack of the *Yavana* conqueror. The conduct of Poros who was made a prisoner after receiving nine wounds as contrasted with that of Dareius is also to be noted in this connection. The Greek army after their experience in the Persian wars surely did not expect this different reception and was naturally disconcerted at the stiff opposition of even such a petty king as Poros. They soon came to understand that the Indian antagonists of Alexander were quite different from the 'effete troops of Persia' which was after all a huge colossus stuffed with sand.

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Agrammes is generally taken to be the last Nanda sovereign. It is possible that this prince was Dhana Nanda as the *Cambridge History* (p. 469) assumes but this is not certain. The name might have some connection with the word Ugrasena a title of the first Nanda.

<sup>1</sup> McCrindle's *Ancient India as described in Classical Litt.*, p. 201.

<sup>2</sup> McCrindle's *Ancient India, its invasion by Alexander*, pp. 61, 67, 147-52, 270, 306.

So it was perfectly legitimate for them to infer the nature of the struggle that awaited them if they crossed the Beas and met the hosts of Magadha. Thus the demoralisation of the Greek army seems to have begun as soon as Alexander crossed the Hindukush and reached its climax on the Hyphasis when the reports about the strength and power of the Nandas began to reach the Greek camp. This must be combined in some measure with the war weariness of the Greek army who seemed to be engaged in strange and distant lands in interminable campaigns. The result was mutiny in the Greek camp and the retreat of Alexander. History thus lost sight of the struggle between the Macedonian conqueror and Agrammes, the only potentate who could claim imperial rank in India at that time. What would have been the results of such a conflict it is difficult to say. It is possible the superior generalship of Alexander would have prevailed in the end. But then it is also probable that if he crossed the Beas and plunged more deeply into the interior of India he would have met the same fate as was reserved later on for Charles XII after his victory at Pultawa or for Napoleon after the capture of Moscow.

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33. Allusions to Vāsudeva Kṛishṇa Devakīputra in the  
Vedic Literature.

By H. C. RAY.

It is not generally known that the name of Vāsudeva Kṛishṇa Devakīputra is mentioned, not only in the Epics and the Purāṇas, but also in at least two works of the Vedic Literature. The tenth Prapāṭhaka of the Taittirīya Āraṇyaka contains the following passage:—

*Nārāyaṇāya vidmahe, Vāsudevāya dhīmahi tanno Viṣṇu prachodayāt.* Here Vāsudeva (Kṛishṇa) is not only mentioned by name, but is already identified with Nārāyaṇa-Viṣṇu. Several scholars, however, regard the 10th prapāṭhaka of the Taittirīya Āraṇyaka as a late addition. But there is at least one reference to Kṛishṇa in a Vedic work about the antiquity of which there cannot be any question. In the Chhândogya Upanisad (III 17.4) we come across a Rishi named Ghora Āṅgīrasa and his pupil Kṛishṇa Devakīputra. Grierson, Garbe, von Schroeder, Bankim Chandra Chatterjee and many other scholars rightly recognise in the latter the great warrior-teacher of the Mahābhārata. In a recent issue of the Journal of the Royal Asiatic Society, however, Mr. Pargiter rejects the identification as unsound. He says: "Kṛishṇa was a very common name, and Devakī (and so the feminine Devakī) an ordinary name, and to identify the two persons because of the similarity of names, in spite of the patent differences, is as unsound as, for instance, to identify James I and James the Old Pretender, because their mothers were named Mary, or to make George I, George II and George IV one person because they all had mothers named Sophia." Now, nobody denies that Kṛishṇa was a very common name. But to say that a second one was also a Devakīputra is a conjecture which requires very cogent proofs to substantiate it. Mr. Pargiter cites some instances from British History of different persons having same names and metronymics. But those instances are not altogether appropriate because, in the West, Princes belonging to one and the same family often have similar names and metronymics. Mr. Pargiter does not suggest that like the two Jameses and the three Georges there were two Yādava princes having the name Kṛishṇa and the metronymic Devakīputra. Such a supposition would have been absurd. Apparently he considers Kṛishṇa Devakīputra of the Upanishad to be quite unconnected with his namesake of the Epic.

If our surmise be correct, he ought to have mentioned two other personages with similar names and metronymics who were quite unconnected with each other. Again Mr. Pargiter has not cited any instance showing the common use of the metronymic Devakîputra. We should have been glad if he had quoted a passage from our ancient literature in which the metronymic is found along with any other name than Kṛṣṇa.

Again Mr. Pargiter is not quite correct when he says that the two Kṛṣṇas have been identified *merely because of the similarity of names* inspite of the patent differences. On the contrary he ignores the fact pointed out by Dr. Ray Chaudhuri in his *Early History of the Vaiṣṇava sect* that not only are the two Kṛṣṇas called Devakîputra but the teachings mentioned in the Chhândogya passage perfectly agree with those of the Bhagavadgîtâ. In the Chhândogya passage, Kṛṣṇa, the son of Devakî is taught the following Rik verses describing the glory of the First Cause.

*Ādit pratnasya relaso udvayan-tamasas-pari jyotiḥ  
paśyanta uttaram svak paśyanta uttaram devam devatrâ  
Sūryam-aganmaj-jyotir-uttamam-iti jyotir-uttamam-iti.*

In the Bhagavad Gîtâ he himself describes God in the following words :—

*"Sarvasya dhâtâram-achintya-rûpam Ādityavarnam  
tamasah parastât. (Gîtâ VIII, 9.)  
Jyotishâm-api taj-jyoti-stamasah pâram-uchyate." (Gîtâ  
XIII. 18.)*

The virtues of Tapa, Dâna, Ârjjava, Ahimsâ and Satya-vachana which Kṛṣṇa Devakîputra learns from Ghora Âṅgîrâsa in the Chhândogya passage reappear in the Gîtâ (XVI, 22)

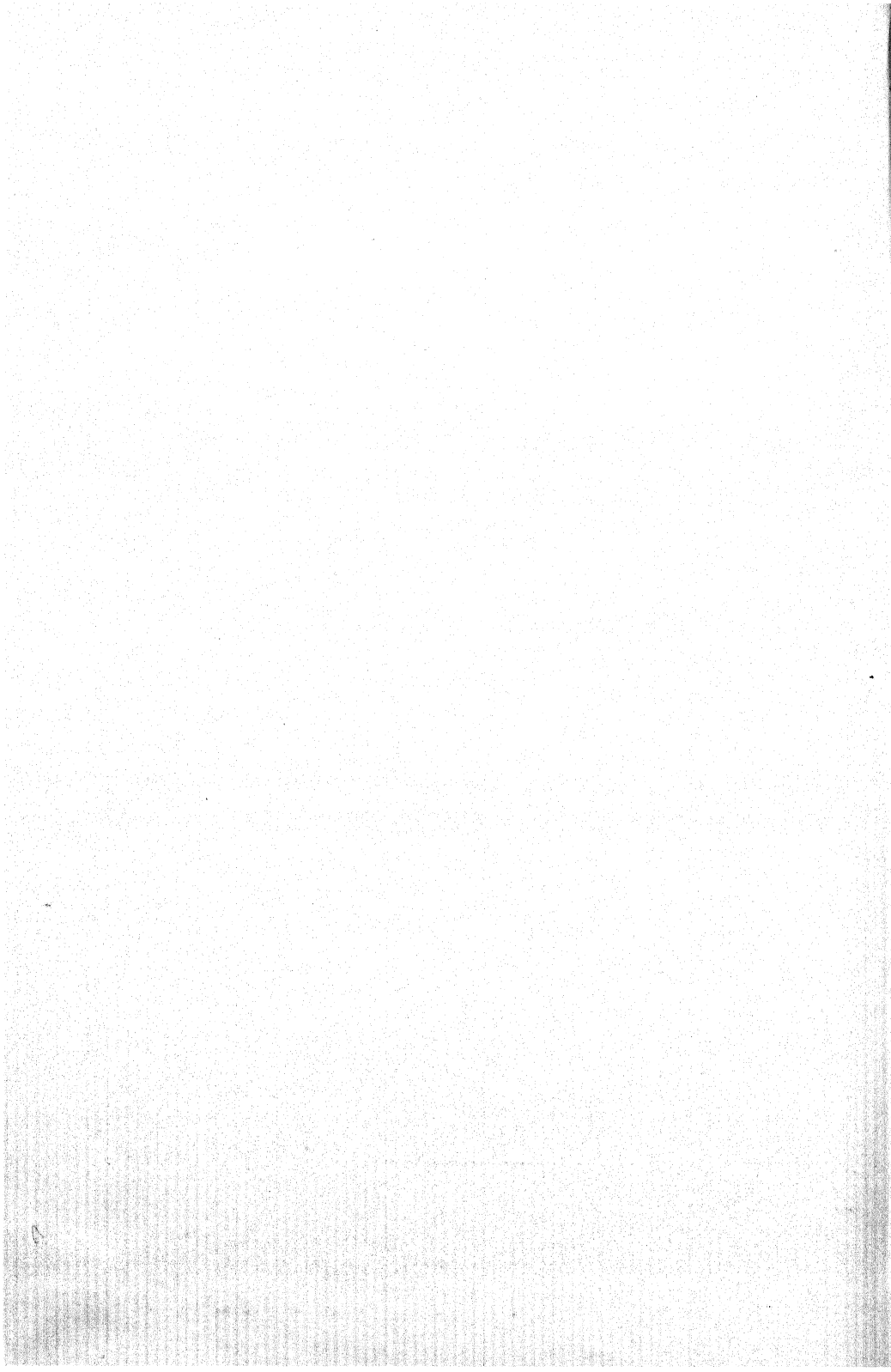
*Dânam damaś-cha yajña-ścha svâdhyâyam tapa ârjjavam.  
Ahimsâ satyam-akrodhas-tyâgah sântir-apaisunam.*

The Âṅgîrâsa family to which Ghora of the Chhândogya passage belonged, is closely associated with the Bhojas as early as the Rîgveda (III, 53,7) and the student of the Aitareya Brâhmaṇa, the Epics and the Purâṇas need not be told that the Bhojas were a powerful section of the Sâtvas, the tribe to which Kṛṣṇa belonged. It was to protect his kinsmen, the Bhojas, that Kṛṣṇa with the help of Sankarshaṇa overthrew Kamsa. In the face of this fact is it altogether unsound to hold that Kṛṣṇa, who has the metronymic Devakîputra and receives his teachings from an Âṅgîrâsa, a scion of a family closely connected with the Bhojas as early as the Rîgvedic period, was identical with the Sâtvata Kṛṣṇa Devakîputra, the grandchild of

the Chief of the Bhojas, specially when the teachings reappear in the Gītā which is ascribed to the latter. It is significant that the Gītā shows some special points of contact with the Chhândogya and the Mundaka Upanishads particularly with passages where the hand of the Âṅgīrasa family is clearly seen. We have already pointed out the close similarity between the teaching of the Gītā and the Chhândogya teaching attributed to Ghora Âṅgīrasa. In the Mundaka Upanishad (where the Âṅgīrasas appear as prominent teachers (I 2-3) the futility of the Vedic Yajñas is clearly shown (II 7). In the Gītā too (II 42-45) we have a denunciation of the multifarious Vedic rites that promised to give wealth and enjoyment, the performers of which are branded as 'Kāmāt-mānaḥ Svargaparāḥ.'

Lastly the fact should not be overlooked that the teacher of the Kṛishṇa Devakīputra of the Chhândogya Upanishad was a solar priest and the deity invoked by him was Sūrya. It is significant that the legends dealing with the origin of the Bhāgavata religion founded by Kṛishṇa Devakīputra of the Epic, are all connected in some way or other with the Sun. Dr. Raychaudhuri draws our attention to a passage of the Sāntiparvaḥ where the Sātvata religion is said to have been declared in ancient times by the Sun :—Sātvatam Vidhimāsthāya prāk Sūrya mûkhanīḥsritam (Mbh, XII, 335.19).

To sum up, we have seen that the epic-Kṛishṇa and the Upanishadic Kṛishṇa have both the metronymic Devakīputra. We have seen that the teacher of the Upanishadic Kṛishṇa belonged to a family closely connected with the Bhojas, the kindreds of the epic-Kṛishṇa. We have further seen that the teacher of the Upanishadic Kṛishṇa was a solar priest and that the Sātvatavidhi preached by the epic-Kṛishṇa was also promulgated by the Sun. Lastly the teachings of the Âṅgīrasa family in general, and of Ghora Âṅgīrasa (the Guru of the Upanishadic Kṛishṇa) in particular, greatly influenced the author of the Gītā who is no other than the epic-Kṛishṇa. In view of these facts—all pointed out by Dr. Raychaudhuri (*Political History of Ancient India*, p. 312)—is it altogether unnecessary and unsound to hold that the two Kṛishṇas were identical ?



### 34. The Date of the Khadga Dynasty of Bengal.

By R. C. MAJUMDAR, M.A., PH.D.

In 1884 or 1885 an inscribed copper-plate was forwarded to the President, Asiatic Society of Bengal by Babu Nilkantha Majumdar of Dacca. It had been found several feet under the earth, at Ashrafpur, police station Raipura, District Dacca. It was exhibited in the monthly meeting of the society held on the 4th March 1885 together with a tentative reading of the inscription prepared by Pandit Kamakhyanath Tarkaratna of the Calcutta Sanskrit College.<sup>1</sup>

A second copper-plate which was found at the same place, and at the same time, was exhibited in the monthly meeting of the Society on the 3rd of December 1890.<sup>2</sup> Both these plates which may be referred to as A and B belong to the reign of a king called Devakhadga, and are now in possession of the Society.

The date of these two inscriptions attracted considerable notice from the very beginning. Dr. R. L. Mitra after a learned disquisition read the date in plate A as 'Samva 713' and referred it to the Vikrama era. On the 5th August 1891, the philological secretary of the Society, Dr. Hoernle, exhibited a Buddhist Chaitya of bronze, which was reported to have been found along with the two copper-plates, and took the opportunity to discuss the dates of the two inscriptions. He held that "both inscriptions are dated in the same year, viz. Samvat 13, the first in Vaisākha 13, the other in Paushadha (sic) 25." He remarked on the reading of Dr. Mitra as follows: "It may be noted, however, that the date was wrongly read by Dr. Mitra in 1885, as being Samvat 713. What he read as the numeral 7, is really the final consonant *t* of *Samvat*; and the two other symbols are not those for 1 and 3, but for 10 and 3." Dr. Hoernle referred the year 13 to the Newar era of Nepal and thus obtained the year 893 A.D. for these two inscriptions.<sup>3</sup>

In 1904 Mr. Ganga Mohan Laskar edited the plate B and gave a revised transcription of the plate A together with an abstract of its contents. He accepted the reading of the dates proposed by Dr. Hoernle, but instead of referring the year 13 to the Newar era of Nepal, he took it as the regnal year of Devakhadga.<sup>4</sup> This view has been accepted by all the writers who have since dealt with these epigraphs.

<sup>1</sup> Proc. A.S.B., 1885, pp. 49 ff.    <sup>2</sup> Ibid, 1890, pp. 242-243.

<sup>3</sup> Ibid, 1891, p. 119.

<sup>4</sup> Memoirs, A.S.B., Vol. 1. pp. 85 ff.

The abandonment of the theory of Newar era led Mr. Laskar to determine the date of the inscriptions with the aid of palæography. He referred them "to the eighth or ninth century A.D." and observed that "the script employed in these inscriptions looks generally older than those used in the inscriptions of the Pāla and Sena kings of Bengal."<sup>1</sup> Mr. R. D. Banerji dissented from this view and was led, on palæographic considerations, to place these inscriptions in the tenth century A.D.<sup>2</sup> On the other hand Messrs. N. N. Basu<sup>3</sup> and N. K. Bhattacharya<sup>4</sup> have referred the plates to the seventh century A.D. mainly on the Chinese testimony to which a detailed reference will be made later on. Mr. R. G. Basak, too, on palæographic considerations referred the plates to the period between the last quarter of the seventh and the middle of the eighth century A.D.<sup>5</sup>

Now all the scholars are in agreement as to the reading of the date 13 in both the records. But it will appear to anyone who compares the two records, that the two numeral figures in L. 15 of plate A are quite different from those in L. 23 of plate B, although both have been read as 13. Further, that while the first numeral figure in L. 15 of plate A resembles the sign for 10 (cf. Bühler's chart, plate IX, Cols. XIII and XIX), the first numeral figure in L. 23 of plate B does not resemble, in the least, any sign for 10 hitherto known to us. So far as I know, the only figure resembling it is that for 7 in the Nepalese Manuscript No. 1702 (Bendall's catalogue of Buddhist Sanskrit Manuscripts-Chart of figure-numerals, the second form for 7). Again, while the second numeral figure in Plate A is ordinary form for 3, that in plate B is a little different. It may no doubt be read as 3, (cf. Bühler's Chart, pl. IX Col. XX), but it may also be read 9 (Ibid Cols. IX, XXI). I may add that the second numeral figure in L. 24 of plate B, which is taken by Mr. Laskar as a sign for 5 should more properly be taken to denote 8 (cf. Bühler's charts and the letter-numerals in Bendall's chart). The date in plate B should be thus read as "year 79 (or 73) day 28."

It may appear incongruous to some that while Plate A contains letter-numerals, figure-numerals should have been employed in Plate B. But this is a well-known phenomenon : and the following remarks of Mr. Bendall are to the point.<sup>6</sup>

"We observe then, first and generally, the remarkable conservatism of the Nepalese Buddhists in preserving side by

<sup>1</sup> Ibid, p. 86.

<sup>2</sup> *Bāṅglār Itihās*, p. 207.

<sup>3</sup> *Bāṅglār Jātīya Itihāsa (Rājanya-Kāṇḍa)*, p. 147.

<sup>4</sup> J.R.A.S. March 1914, *A forgotten kingdom of East Bengal*; Dacca Review, January, 1922, p. 139.

<sup>5</sup> *Sāhitya*, 1321, pp. 468, 469; *Prācīn*, Vol. I, part I, p. 42.

<sup>6</sup> Bendall's *Catalogue of Buddhist Sanskrit Manuscripts*, Introduction, p. LIII.

side with the new system of digit numerals the old system of numeration by aksharas or syllables which I have termed 'Letter-numerals.'

Further, as Kielhorn<sup>1</sup> has already pointed out we find in the dated portion of the Banskhera copper-plate of Harshavardhana that '2' is denoted by a numeral figure but the preceding '20' and the following '1' by numerical symbol."

Now if the Plate A is dated in the year 13 and the Plate B in the year 79 (or 73) the question arises, are both of these to be referred to the regnal years of king Devakhadga or to one and the same era? None of these two hypotheses seems to be probable, for it is difficult to believe that a king ruled for such a long period as 73 or even 60 years (difference between 73 and 13, supposing both to be years of the same era and the year 13 of the era, the date of the accession of the king). It may be held no doubt that a king might rule for 60 years, having ascended the throne in his childhood. But there is one difficulty against this supposition. Both the plates were written by one and the same man Pūradāsa, a devout Buddhist. Now he could hardly have been appointed to such an important post as the official scribe before the age of 25 and, if we take both the years as referring to the regnal years or to the same era, we are led to the conclusion that he was employed in the same post even while he was eighty-five or more. On these grounds it is better to take the year 13 as the regnal year and 79 (or 73) as that of an era.

Instances are not rare where the records of one and the same king are dated differently, i.e. both in the regnal years as well as in the years of an era. Two instances may be cited from the seventh century A.D., the period to which in our opinion the plates A and B belong. Thus, the Bādāmi cave inscription of the Western Chālukya king Maṅgalēśa is dated in Śaka 500, while the Mahākūta pillar inscription is dated in the 5th year of his reign.<sup>2</sup> Again, the Gadval plates of Vikramāditya I are dated in the Śaka year 596<sup>3</sup> while the Karnul district plates of the same king are dated in the 3rd and 10th years of his reign.<sup>4</sup>

There remain thus no objections to referring the plate B to the year 79 (or 73) of an era. In order to determine what this era is we have to discuss the palæography of the inscriptions.

In general the alphabets of the two plates A and B resemble those of the Khālimpur copper plates of Dharmapāla. The letters *th*, *ph*, and *a* in our plates no doubt appear to have more advanced forms; but *th* occurs only in conjunction with

<sup>1</sup> Kielhorn's List of Northern Inscriptions, No. 528, footnote.

<sup>2</sup> Kielhorn's List of Southern Inscriptions, Nos. 3 and 5.

<sup>3</sup> Ep. Ind., Vol. X., p. 100.

<sup>4</sup> Kielhorn's List of Southern Inscriptions, Nos. 18 and 19.

superscript *r* and offers no suitable basis for comparison. On the other hand the subscript *y* in our plates is of decidedly earlier form while *j* (particularly in the brass image inscription of Prabhāvati, queen of Devakhaḍga)<sup>1</sup> and *t* also show less advanced forms than those of the Khālimpur plates. Again the latter contain a few advanced forms of *p* which are entirely wanting in our plates. On these grounds it is safe to refer our plates within a century of Dharmapāl's time.

The results of palæographic discussion thus induce us to refer the year 79 (or 73) of the plate B to the Harsha era. The use of this era by Āditya Sena of Magadha who also flourished about the latter half of the seventh century A.D., shows that it was familiar in eastern part of Northern India where Devakhaḍga's kingdom was situated. Thus Devakhaḍga was on the throne in 679 or 685 A.D., and the dynasty of the Khaḍga kings may be said to have established their supremacy almost immediately after Harshavardhana's time.

This conclusion about the date of the Khaḍga kings fits in excellently well with a few scattered notices of eastern India left by the Chinese pilgrims.<sup>2</sup>

In the beginning of the eighth century A.D. I-tsing wrote "an account of fifty-six priests or Buddhist converts who visited India and the neighbourhood from China and bordering districts during the latter half of the seventh century A.D." In connection with one of these, Hwui Lun by name, he refers to Devavarmā as the ruling king of Eastern India, and says, with reference to a temple, that 'recently a king called Sun-Army (Āditya Sena) built by the side of the old temple another, which is now newly finished.' Thus Devavarmā and Āditya Sena were contemporaries or very nearly so. Again when Seng-Chi one of the last batch of priests described by I-tsing came to India, Rājabhāta was the king of Samatāṭa or Eastern Bengal. Now Devavarmā and Rājabhāta who thus ruled in Eastern India during the latter half of the seventh century A.D. may be identified with Devakhaḍga and his son Rājarāja (according to plate B) or Rājarājabhāta (according to plate A).<sup>3</sup> There are no doubt discrepancies between the Chinese and Indian forms of the names but the essential parts of

<sup>1</sup> Any discussion on the palæography of the Khaḍga Inscriptions must now take this inscription into account. Its letters are decidedly of earlier type than those of the copper-plates. Mr. N. K. Bhattasali is editing it and I am indebted to him for a photograph of it.

<sup>2</sup> Life of Hiuen-Tsang by S. Beal, Introduction, pp. XXVI, XXXVI, XL. Chavannes, *Memoires Sur les Religieux Eminents*, pp. 83, 81, 128.

<sup>3</sup> As stated above, the identification of Rājabhāta of the Chinese pilgrims and Rājarājabhāta of the plates has already been proposed by Mr. N. N. Basu and Mr. N. K. Bhattasali (op.cit). Mr. Bhattasali pointed out the further synchronism of Āditya Sena and Devavarman in *Dacca Review*, January, 1922, p. 139.

the names are the same.<sup>1</sup> The general agreement in respect of locality and the names of two successive kings lends great weight to the supposition.

The date we have assumed for the Khadga kings also throws interesting light on the origin of the famous Pāla dynasty. Mahāmahopādhyāya Haraprasad Sastri came across a commentary on Prajñā Pāramitā in the Durbar Library of Nepal, which was written by one Haribhadra during the reign of Dharmapāla. Haribhadra who mentions this fact in the colophon qualifies Dharmapāla by the epithet 'Rājabhata-ādī-Vamśa-patita.'<sup>2</sup> It would then follow that Dharmapāla was a scion of the family of Rājabhata, son of Devakhadga, and this hypothesis gains additional strength when we remember that both the Pālas and the Khadgas were Buddhist kings. Mr. R. D. Banerji rejected this hypothesis<sup>3</sup> on the ground that Devakhadga was later than Dharmapāla. But if, as we have shown above, there are good grounds for placing Devakhadga and Rājabhata towards the close of the seventh century A.D. Haribhadra's statement about the relations between the Pālas and the Khadgas cannot be lightly thrown away. The proximity, in point of time, and the identity, in respect of locality and religion, between the two dynasties invests it with a certain degree of credibility, and further enquiry on this line may reveal an undiscovered chapter in the early history of the Pālas. That is however an entirely different topic and for the present the date of the Khadgas forms the main subject of discussion. From our point of view Devakhadga flourished in the latter half of the seventh century A.D. and once this is accepted as settled, ways would be clear for further inquiry on the line suggested above.

<sup>1</sup> As to the difference in the name-endings in Deva-Khadga and Deva-Varmā it may be pointed out that Varmā is a well-known epithet assumed by royal personages and it is not unlikely that the title of Khadga was sometimes interchanged with that of Varma, both referring to instruments of war. The Rāshtrakūṭa king Dantidurga, for example, was known also as Dantivarmā.

<sup>2</sup> Mm. H. P. Sastri came across a commentary on Prajñā Pāramitā in the Durbar Library of Nepal.

Commenting on Dr. Rajendra Lal Mitra's notice of Prajñā Pāramitā Tīkā (Sanskrit Buddhist literature of Nepal by R. L. Mitra—Calcutta 1882, pp. 194-195 No. A. 17) Mm. H. P. Sastri remarks at the end of his own copy of the book "Dr. Mitra is wrong in attributing the commentary on P.P. to Maitreya. . . . The Tīkā to the P.P. 8,000 is by Haribhadra who wrote his work in the reign of Dharmapāla. . . . After the colophon of the 32nd Chapter Haribhadra says

"Rāje Rājabhata-ādī-vamśa-patita Śrī-Dharmapālasya vai  
Tattvāloka-vidhāyinī virachitā Sat-pañjik=eyam mayā"

<sup>3</sup> Bāṅglār Itihāsa, p. 141.

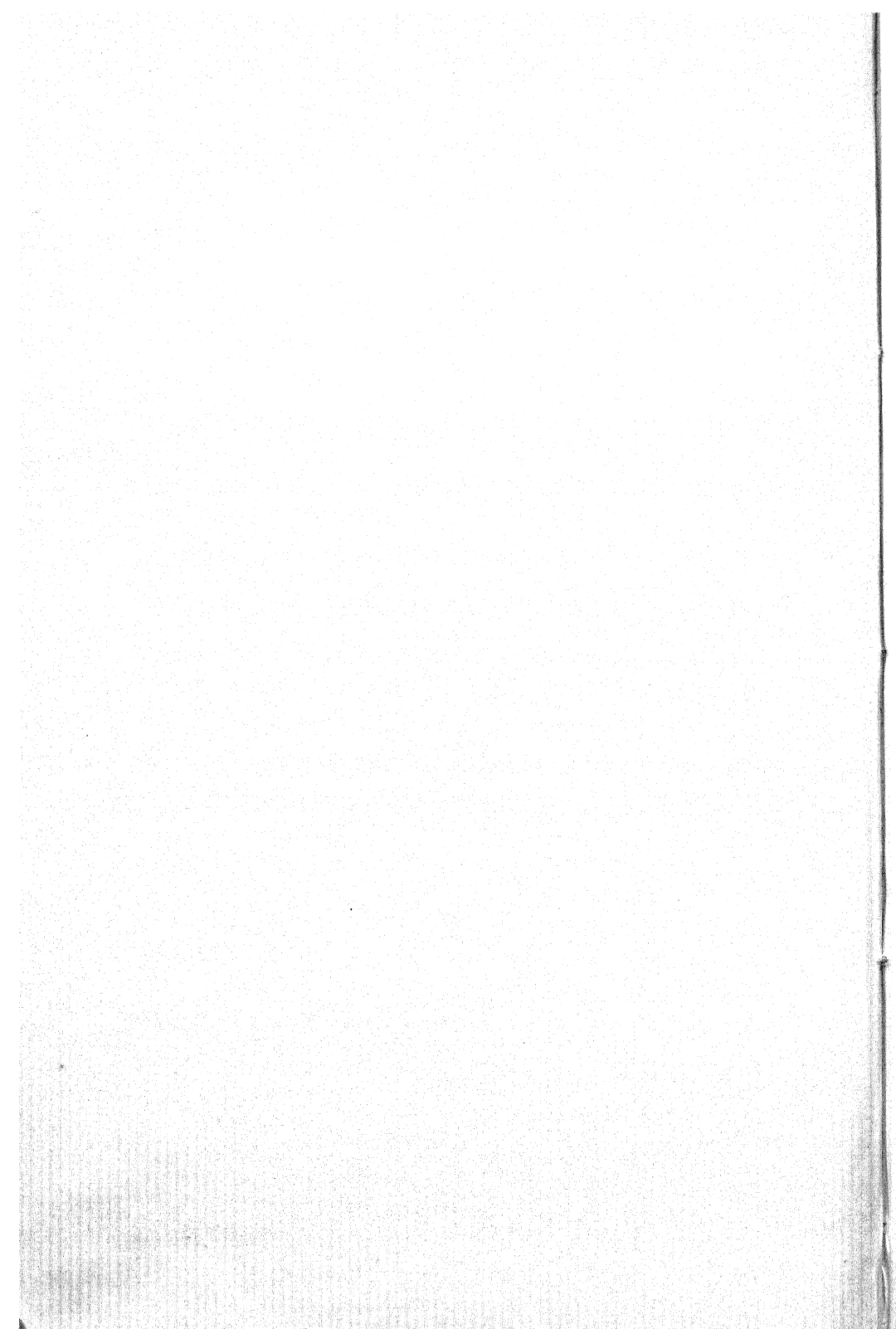
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Articles 35-41.

Zoological Results of the Percy Sladen Trust Expedition  
to Yunnan under the leadership of Professor  
J. W. Gregory, F.R.S. (1922).

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35. ZOOLOGICAL RESULTS OF THE PERCY SLADEN  
TRUST EXPEDITION TO YUNNAN UNDER THE  
LEADERSHIP OF PROFESSOR J. W. GREGORY.  
F.R.S. (1922).

INTRODUCTION.

By PROF. J. W. GREGORY, F.R.S. and C. J. GREGORY, B.Sc.

The problems of South-Eastern Asia require for their solution the combined help of the zoologist, botanist, geographer and geologist; for the determination of the former extension of the lands and mountain chains, and the dates of the regional uplifts depends on the distribution of animals and plants as well as on the geological structure and geographical grain of the existing land. While many biologists hold that the ocean basins have lasted throughout geological time the general opinion amongst geologists is that the Indian Ocean occupies the site of a continent which existed until, geologically speaking, a modern date. The subsidence of that land on the formations of the Indian Ocean weakened the plateau of Equatorial Africa, which, during the periods of geological time from the Cretaceous to the present day, was broken by north to south fractures that formed the rift valleys, sunken basins, and colossal lava fields of Eastern Africa. Corresponding developments may be expected to have occurred on the eastern side of the Indian Ocean though they would be dissimilar in form as Equatorial Africa and South-Eastern Asia are fundamentally different in structure.

In the hope of throwing further light on the condition of South-Eastern Asia at the time when the Great Rift Valley was being formed in East Africa, one of us had on three occasions planned a journey to areas in South-Eastern Asia where features corresponding to the tectonic valleys of East Africa may exist. At length in 1922 an opportunity to carry out this project became possible. It was aided by a grant from the Percy Sladen Memorial Trust and was therefore one of the expeditions dedicated to the memory of Percy Sladen. We began our march overland at Bhamo on the Irrawadi, along the well-known road into Southern China through Tengyueh to Yung-chang. We there turned north and till we reached the road again at Tali-fu, crossed country, most of which was geologically and some of it geographically unknown. The special problem of the expedition was to see whether there be any direct eastward continuation of the Himalaya into Central and North-Eastern China, as was held by the late Prince Kropotkin and A. Little, or

whether the extension of the Himalaya is through the western mountains of Burma and the southern mountains of the Eastern Archipelago. On that problem depends, among other issues, the interpretation of the rivers which drain South-Eastern Tibet and the relations of the Brahmaputra to the Irrawadi. In the hope of contributing to the biology of this region and partly from the light its evidence throws on the geological history of South-Eastern Asia, we made some zoological and botanical collections. We are especially indebted to Dr. Annandale, Dr. Kemp and Dr. Prashad of the Zoological Survey of India, and to Prof. Tattersall and Major F. C. Fraser, for their help and encouragement and for the promptitude with which they have worked out the Mollusca, Crustacea and Dragon-flies collected, and have described them in the accompanying papers. The general geographical work of the expedition has been described in a paper "The Alps of Chinese Tibet and their Geographical Relations" (*Geogr. Journ.*, Vol. LXI, No. 3, 1923, pp. 153-79). A map based on a sketch map compiled by one of us (C.J.G.) and prepared under the supervision of Mr. Reeves at the Royal Geographical Society, is being issued with an accompanying note in the *Geographical Journal*.

A paper on the Banda Arc and its bearing on the former eastward extension of the structural lines of the Eastern Archipelago has been published in the *Geographical Journal* (July, 1923, pp. 20-32). The general narrative of the expedition is being told in a volume entitled "To the Alps of Chinese Tibet." A memoir on the geology and physical geography will, it is hoped, be completed shortly.

36. ZOOLOGICAL RESULTS OF THE PERCY SLADEN TRUST EXPEDITION TO YUNNAN UNDER THE LEADERSHIP OF PROFESSOR J. W. GREGORY, F.R.S. (1922).

LAND MOLLUSCS.

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The country traversed by Professor Gregory's expedition comprises the upper region of four great river-systems, those of the Irrawadi, the Salween, the Mekong and the Yangtse. Conditions were unfavourable at the time of his tour for the collection of land molluscs and although he obtained a considerable number of specimens, only 18 recognizable species and one subspecies are represented. These cannot be regarded as completely representative of the fauna of the province, or even of that of the localities visited, but the collection casts an interesting light on the molluscs of a region hitherto little known to malacologists. There is no reason to think that Yunnan is less rich in land snails than other parts of China, but a glance at the lists published by Möllendorff<sup>1</sup> and by Gude,<sup>2</sup> which would not be greatly amplified in respect to Yunnan if brought up-to-date, will show how few species are known from that province compared with those known from others adjacent to it.

Of the 19 forms in the collection, 6 are here described as new. All of these but one belong to the genus *Buliminus* or *Ena* in a wide sense, though they differ greatly in the form of the shell, falling as they do into four of the subgenera generally recognized. In addition, a new subspecies of *Helicarion* is described. The remaining 12 species have all been recorded already either from Yunnan itself or from adjacent provinces.

Political divisions are not necessarily of importance in zoogeography and it will be more profitable to consider the distribution of the land snails of Yunnan in reference to the watersheds they inhabit than to the province into which their habitats chance to fall. Of the complete list of species from this province a few words may, however, first be said.

Such a list, which would of course be complete only from a purely literary point of view, would comprise some 85

<sup>1</sup> Möllendorff, *Ann. Mus. Hist. Nat. St. Pétersburg*, VI, p. 404, 1902.

<sup>2</sup> Gude, *Malacologist*, IX, p. 1 (1902).

species.<sup>1</sup> Some of these stray over the Kakhien (Kachin) mountains or up the rivers themselves from Burma into the upper Salween valley or the valleys of the tributaries of the Irrawadi, but the species and even the genera are for the most part Chinese, except in the extreme west of the province. Some such characteristic Chinese genera as *Cathaica*, the range of which extends as far west as Kashmir, are absent or almost absent from Yunnan, but on the other hand still more characteristic genera and subgenera such as *Euhadra* and *Holcauchen* occur.

Of the 19 forms represented in the collection now under consideration none were collected in the Irrawadi or the Salween watersheds, 16 in that of the Mekong, and 3 in that of the Yangtse. It is difficult if not impossible to discover in what watershed shells recorded previously from Yunnan were discovered as the localities published are often those of obscure villages, but it is noteworthy that with one exception (in which there are different subspecies in the two watersheds) no species that Professor Gregory and his son collected was found on both the Mekong and the Yangtse. None, moreover, except the peregrine *Eulota singularis* are identical with those obtained by the late Dr. John Anderson<sup>2</sup> on the upper Salween. These last, indeed, as might have been expected, were for the most part not Chinese, but Burmese forms.

#### DESCRIPTION OF THE COLLECTION.

##### Family ZONITIDAE.

##### 1. *Helicarion resinaceus* Heude.

1885.<sup>3</sup> *Helicarion resinaceus*, Heude, *Mém. Hist. Nat. Emp. Chinois* 1, p. 102, Plate XXVI, Fig. 6.

One large shell in good condition. North foot of Jing-la, Jugeh river a tributary of the Yangtse. Altitude, 7,200 feet. 29. vii. 22.

This shell differs from Heude's figures in that the spire is slightly more elevated, but especially in the sculpture, the form of the mouth and the structure of the umbilicus, the agreement is otherwise close. It has the peculiar resinous lustre that doubtless suggested the specific name, and has almost exactly the same measurements (viz. 20 mm. × 17 mm. × 10.5 mm.) as those given for the type specimen.

<sup>1</sup> The synonymy of some of the species is so obscure that exact numbers are at present impossible.

<sup>2</sup> Nevill in Anderson's *Zool. Anat. Res. Yunnan*, p. 873.

<sup>3</sup> I am indebted to Dr. Baini Prashad for information about the dates of publication of the different parts of Heude's account of the molluscs in his "Mémoires." Parts 1 and 2 (pp. 1-87, Plates XII-XXI) were issued in 1882; part 3 (pp. 88-124, Plates XXII-XXXII) in 1885 and part 4 (pp. 125-190, Plates XXXIII-XLIII) in 1890.

The species was described from "Ta-kuan-Chen" in Yunnan.

2. Subsp. *subresinaceus*, nov.

(Plate 16, Figs. 1, 1a, 2, 2a).

Eleven shells (three immature), mostly in poor condition. Canyon of the Mekong above Lo-atar (below Tseku). 3 vii. 22.

This form is closely allied to the typical *H. resinaceus*, but differs:—

- (1) In the smaller size of the shell;
- (2) In its more elevated spire, which however, shows some variation;
- (3) In the presence of an indistinct peripheral angulation on the body-whorl;
- (4) In the finer sculpture.

*Measurements of shells.*

Height ..	.. 11.5 mm.	.. 12.5 mm.	.. 11.75 mm.
Max. diameter ..	.. 18.5 mm.	.. 19.25 mm.	.. 20 mm.
Min. diameter ..	.. 16.75 mm.	.. 16.5 mm.	.. 16 mm.
Height of mouth ..	.. 9.5 mm.	.. 9.5 mm.	.. 9 mm.
Diameter of mouth ..	.. 9 mm.	.. 9 mm.	.. 10 mm.

*Type-specimen.* In coll. Z.S.I. (Indian Museum), M 1212<sup>10</sup>.  
Paratypes sent to the British Museum.

This form appears to be no more than a local race or environmental phase of *H. resinaceus*. The Mekong gorge, as Professor Gregory informs me, has a drier climate than the Jing-la.

*Macrochlamys* ? *hypoleuca* Blanford.

1865. *Nanina* (*Macrochlamys*) *hypoleuca*, Blanford, *Journ. As. Soc. Bengal* (2), XXXIV, p. 67.

1876. *Nanina* (*Macrochlamys*) *hypoleuca*, Nevill in Anderson's *Zool. Anat. Res. Yunnan*, p. 874.

1906. *Macrochlamys hypoleuca*, Blanford and Godwin-Austen, *Faun. Brit. Ind. Moll.*, I, p. 120.

A single large shell from Zurding-kai, half a mile west of Beh-yang-Chang in the basin of the Loma-Ho. Altitude, 9,600 feet.

I am not sure of the identification of this shell. It seems to be a little flatter than Burmese specimens and is larger (max. diam. 15 mm.), but the spire is broken. Nevill records the species from Bhamo.

*Kalliela lamprocystis* Mölldf.

1899. *Kalliela lamprocystis*, Möllendorff, *Ann. Mus. Zool. St. Pétersburg*, IV, p. 54, Plate II, Fig. 4.

Two shells (one immature), north of Shihku beside the river Yangtse, on tree-trunks. Altitude, 6,200 feet. 6. viii. 22.

The large shell agrees very well with Möllendorff's figure, but is slightly smaller. The species was described from between Li-dshia-pu and Kuang-ting in Kangsu.

### Family TROCHOMORPHIDAE.

#### *Trochomorpha demolita* Heude.

1885. *Helix demolita*, Heude, *op. cit.*, p. 108, Plate XXIX, Figs. 7, 7a.

1902. *Plectotropis demolita*, Gude, *op. cit.*, p. 9.

Described from Tchen'cou in Szechuan.

#### Var. *tonkinorum* Mabilie.

1887. *Trochomorpha tonkinorum*. Mabilie, *Bull. Soc. Malacol. France*, IV, p. 97, Plate III, Figs. 1-3.

1892. *Trochomorpha tonkinorum*. Pilsbry in Tryon's *Man. Conch.* (2), VIII, p. 120, Plate XIX, Figs. 17, 18.

One shell in perfect condition. Cliff above the Mekong at Awa bend. Altitude, 6,400 feet. 30. vi. 22.

I am convinced that this is merely a dwarf form of Heude's "*Helix demolita*." The outlines are identical and the description applies equally well, apart from measurements, to both forms.

The flattened outline of the shell, conoid spire, transverse mouth with its strong terminal projection and depressed upper lip, are, considered together, very characteristic. The mouth is much wider than that of *T. samara* (Heude).<sup>1</sup> The measurements of the specimen from Yunnan are 12.5 mm. × 11.5 mm. × 4 mm. To judge from his figure, Mabilie's measurement of the height of the shell, which appears to have been a little over 4 mm. high, was too small.

The form was described from Tonkin.

### Family HELICIDAE.

#### *Plectotropis submissa* (Desh.).

1873. *Helix submissa*, Deshayes, *Bull. Arch. Mus. Hist. Nat.* (Paris), IX, p. ii, Plate II, Figs. 30-32.

1882. *Helix submissa*, Heude, *op. cit.*, p. 30, Plate XV, Figs. 2, 2a.

1887. *Helix (Trichia) submissa*, Tryon, *Man. Conch.*, III, p. 182. Plate XXXIX, Figs. 9, 10.

1899. *Plectotropis submissa*, Möllendorff, *op. cit.*, p. 64.

A large number of shells from a cliff above the Mekong at Awa bend (altitude, 6,400 feet), and from the canyon of the Mekong above Lo-atar. 1-3. vii. 22.

Most of these specimens are small, not exceeding 10 mm. in maximum diameter, but three from the canyon are larger, about 13 mm. in maximum diameter. Those which are not bleached are rather dark hair-brown, sometimes with a narrow white peripheral band. There is considerable variation in the flatness of the upper surface of the shell.

<sup>1</sup> *Helix samara*, Heude, *op. cit.*, p. 142, Plate XXXVII, Fig. 3 (1800).

This is one of the most widely distributed of the Chinese land-snails. It is found all down the valley of the Yangtse to Shanghai.

#### 7. *Eulota similaris* (Fér.).

1914. *Eulota similaris*, Gude, *Faun. Brit. Ind. Moll.*, II, p. 200.

A single shell from Shang-kuan, north-west shore of Erh-hai. Altitude, 7,000 feet.

This shell agrees very well with Burmese examples except that the sculpture is a little stronger.

The species, according to Gude, has the widest range of any land mollusc. There are specimens in the collection of the Indian Museum from Sanda in western Yunnan.

#### 8. *Eulota latrunculorum* (Heude).

1885. *Helix latrunculorum*, Heude, *op. cit.*, p. 106, Plate XXVII, Fig. 17.

Two shells, one fresh, one dead. North-west shore of Erh-hai (Lake Tali) near Shang-kuan. Altitude, 7,000 feet. 13. viii. 22.

The fresh shell agrees closely with Heude's figure in every respect except that the columellar fold is slightly narrower—not an important character. The shape differs slightly in the other specimen, the mouth in particular being very narrow and the spine higher.

The species was described from eastern Szechuan.

#### 9. *Euhadra haplozona* (Mölldff.).

1899. *Euhadra haplozona*, Möllendorff, *op. cit.*, p. 84, Plate V, Fig. 1.

1919. *Euhadra haplozona*, Gude, *Proc. Mal. Soc.*, XIII, p. 118.

Two bleached shells (one broken) from the canyon of the Mekong above Lo-atar (below Tseku) and one from Tseku. 3. vii. 22.

The species was described from north-west Szechuan and has been recorded from the Min Valley in the same province by Gude.

#### 10. *Buliminopsis conoideus* (Heude).

1890. *Buliminopsis conoideus*, Heude, *op. cit.*, p. 147, Plate XXXVII, Fig. 25.

1899. *Buliminopsis conoideus*, Möllendorff, *op. cit.*, p. 131.

Two broken shells from a cliff above the Mekong at the Awa bend. Altitude, 6,400 feet. I. VII, 22.

The less incomplete of the two specimens agrees well with Heude's figure.

The specimen was described from eastern Szechuan.

#### 11. Family BULIMINIDAE (Enidae).

##### *Buliminus* (*Mirus*) *frinianus* (Heude).

1894. *Buliminus frinianus*, Heude, *op. cit.*, p. 115, Plate XXX, Fig. 8.

1901. *Buliminus frinianus*, Möllendorff, *Ann. Mus. Zool. St. Pétersburg*, VI, p. 319.

Several shells from the gorge of the Mekong north of Sha-wa-tsun (altitude, 6,200 feet) and from a cliff above the same river at the Awa bend (altitude, 6,400 feet). 30. vi and 1. vii. 22.

Most of the shells are bleached and opaque. Those that retain the periostracum are of a rather pale hair-brown with a white peristome.

Möllendorff regards this form as hardly more than a local race of *B. minutus* from Kiangsu. It was described from Wu-yuan in Anhui "Ou-yuan"?

## 12. *Buliminus* (Subzebrinus) *tigricolor*, sp. nov.

(Plate 16, Figs. 3, 3a).

A single fresh shell (with many of *B. tubios*) from the gorge of the Mekong above Yangtsa. Altitude, 7,000 to 7,500 feet. 10. vi. 22. In arid conditions.

*The shell* is dextral, small and solid, ventricose, rather broadly ovate, acuminate, with six whorls. Except the body-whorl, the whorls are all shallow and increase in depth very gradually. The body-whorl is almost as deep as the fourth and fifth whorls together. The suture is linearly impressed and by no means oblique. The whorls are slightly convex. The body-whorl descends comparatively little. The umbilicus is narrowly rimate. The mouth is pear-shaped and rather large. Its peristome is widely interrupted. There is a minute but prominent rounded tubercle just within the lip at its left upper extremity. The lip is narrowly flattened and expanded. The external surface has a porcellaneous appearance. It is pale luteous on the protoconch, which consists of the first three whorls, lutescent on the fourth whorl with brownish longitudinal streaks on the younger parts, and shining white on the remainder of the shell with deep chestnut streaks on the lower parts. The first two whorls are smooth and slightly polished, the third sculptured with fine, close-set longitudinal striae. These become stronger on the lower parts and prominent but very irregular costae, always of a shining white colour, take their place on the lower parts of the body-whorl.

The species is remarkable for its ventricose shell, in this respect resembling the Himalayan *B. nivicola*, which, however, has a sinistral shell and a more conoidal outline and is less acuminate.

*Type-specimen* in the Z.S.I. (Indian Museum), M  $\frac{12}{2} \frac{21}{1}$ .

## 13. *Buliminus* (Subzebrinus) *dolichostoma* Mölldf.

1901. *Buliminus* (Subzebrinus) *dolichostoma*, Wiegmann, *op. cit.*, p. 228, Plate X, Figs. 22, 23 (anatomy).

1901. *Buliminus dolichostoma*, Möllendorff, *op. cit.*, p. 338, Plate XII, Figs. 13, 14.

I attribute to this species without much doubt a "dead," perhaps subfossil but perfect shell and an imperfect young

shell in the same condition from Shangkuan near the N.W. shore of Erh-hai (Lake Tali) (altitude, 7,000 feet), taken in earth with many lacustrine forms. The shell, which is completely decolourised, agrees fairly well with Möllendorff's figures in outlines and precisely in dimensions. It is perhaps very slightly more conoidal and has the peristomal tubercle less well-developed.

The species was described from the province of Kansu, between Yu-lin-quan and Wen-hsien.

#### 14. *Buliminus (Pupinidius) chrysalis*, sp. nov.

(Plate 16, Figs. 4, 4a).

A large series of shells with the dried animals was obtained in the gorge above Yangtsa in the Mekong valley between 7,000 and 7,500 feet in July, on granite, in somewhat arid conditions.

*The shell* has six whorls and is dextral and of a large size, but thin and light. The protoconch is broad and helicaliform, but the rest of the shell from the fourth whorl downwards is broadly cylindrical. The apex is acuminate. The first three whorls increase in breadth very rapidly, the fourth is much narrower above than below, but the rest of the shell has an almost uniform breadth. The fifth whorl is more than twice as high as the fourth, and the body-whorl higher than these two together. The suture is oblique and hardly impressed; the whorls are not convex. The base of the body-whorl is strongly compressed but not at all keeled. The umbilicus is deeply rimate and very oblique at its opening. The mouth is large, ovate, obliquely pointed above, with its main axis forming an obtuse angle with that of the shell. The peristome is complete and without armature. The lip is hardly at all expanded and very narrowly everted. The surface has a dull lustre. The sculpture consists of oblique longitudinal striae of variable strength. Sometimes, on some parts, they form separate ridges which have the character of costae. The protoconch is pale chestnut; the rest of the shell dirty flesh-colour, sometimes with irregular brownish longitudinal streaks.

*The radula* is remarkable for the fact that the central is hardly at all differentiated from the inner laterals either in size or in outline. There is no trace in these teeth of lateral denticulations but each consists of a basal portion and a single cusp in the form of a somewhat irregular isosceles triangle, the apex of which is often blunted by use. The upper proximal margin is almost evenly rounded. When unworn the cusp is slightly longer than the basal portion. There are about 20 teeth of this kind in a transverse row, including the central in the middle. On the teeth beyond these an internal lateral cusp makes its appearance in the

form of a triangular projection, but so gradually that it is difficult to say exactly on what tooth it first appears. As the series precedes outwards on both sides the main cusp becomes narrower and sharper and the lateral cusp more prominent. After about 12 teeth the latter becomes minute and continues in this condition to the edge of the radula. There are about 80 teeth in a transverse row.

*Type-specimen* in the Z.S.I. (Indian Museum), M 12116. Paratypes in the British Museum.

The species is probably related to *B. heudeanus* Ancey<sup>1</sup> from the province of Szechuan, but the shell is much broader and has one whorl less and the lip is still narrower. In this last character, however, it does not conform to Möllendorff's definition of the subgenus *Petraeomastus*, of which *B. heudeanus* is the type and from which it also differs in the absence of the peristomal tubercle.

### 15. *Buliminus* (*Petraeomastus*) *latilabrum*, sp. nov.

(Plate 16, Figs. 5, 5a).

A good series of shells with dried animals in them was obtained on the upper Yangtze west of Pung-tsu-la (altitude about 9,500 feet) in July in very arid conditions: also a single shell at Shahi (altitude, 9,600) in the same district on a tributary of the Yangtze.

The shell is of large size, but rather thin, eight-whorled dextral, subcylindrical and tapering towards the apex from the sixth whorl upwards. The apex is very minutely mucronate. The whorls increase in depth evenly and progressively, more rapidly in the upper part of the shell than below. The seventh is about twice as deep as the sixth, but the body-whorl is not as deep as these two together. The protoconch passes gradually into the younger whorls. The suture is linear and slightly impressed; the whorls are slightly convex. The base is compressed for a considerable distance and does not descend so much as in some species. It expands round the mouth abruptly. The umbilicus is very narrowly rimate and hardly perforate. The mouth is large and oval, oblique, and situated on the left of the shell. The peristome is widely interrupted, but joined by a thin callus. There is an obscure tubercle at its left upper extremity. The lip is very widely expanded and flattened and slightly retroverted, forming an almost membranous annular plate, which is more or less broken in all the specimens examined. The surface of the shell has a dull lustre. The sculpture consists of fine, irregular curved longitudinal striae and sometimes of obscure

<sup>1</sup> *Buliminus tibetanus*, Heude (nec Pfeiffer), *op. cit.*, Plate XVII, Fig. 9. *B. (Napaes) heudeanus*, Hilber, in Bela Szecheny's *Wiss. Ergebn. Reise*, II, p. 603, Plate III, Figs. 5, 6

malleations, which are, as a rule, confined to the basal and penultimate whorls. The protoconch is dull chestnut. This colour passes into an obscure liliaceous or vinous tint on the other whorls. Irregular vertical vinous or brownish striae are sometimes present. The lip is pure white, while the internal surface is tinged with brown. One specimen (from Shahi) is of an almost uniform pale, yellowish colour.

*The radula.* The teeth are shorter than in *B. chrysalis* but broader and the central is distinctly shorter than the inner laterals. The upper margin of the cusp is irregularly trilobed. The transition from laterals to marginals (counting the latter from the point at which the lateral cusp appears) is more abrupt and the main cusp of the marginals is more expanded and blunter, while the outer cusp is more prominent and gradually assumes a pectinate character with from three to five small sharp denticulations. Sometimes the main cusp, which persists distinct, is broadly bilobed, but this appears to be an abnormality. The formula is 24:11:1:11:24.

*Type-specimen* in the Z.S.I. (Indian Museum), M  $12\frac{1}{2}$ . Paratypes in the British Museum.

The species seems to be related to *B. semifartus* Möllendorff. The shell, however, is distinctly larger and more strongly sculptured and has the last three whorls deeper, the mouth larger, the umbilicus apparently deeper, the body-whorl subcarinate instead of evenly convex in vertical view and the lip still more expanded. *B. semifartus* (Möllendorff, *op. cit.*, Plate XV, Figs. 1-5) was described from several localities in Szechuan.

16. *Buliminus* (Holcauchen) *gregoriana*, sp. nov.

(Plate 16, Figs. 7, 7a).

The species is abundant in the gorge of the Mekong north of Sha-wa-tsun at an altitude of 6,200 feet at the end of June.

The shell is dextral, small, solid, elongate, somewhat fusiform, bluntly acuminate and *Clausilia*-like. It has eight whorls. The apex is minutely and obliquely mammillate. The suture is impressed and the whorls, especially the second and third, are somewhat convex. The first four whorls form the protoconch. The whorls increase in depth gradually and the depth of the body-whorl is considerably less than that of the two preceding whorls together. This whorl is not or hardly constricted in the upper part. Its base is compressed abruptly and the constriction is apparent only on the right side. The whorl descends very little and the mouth is in exactly the same plane in its longer axis as the ventral surface of the whorl. The shell is rimate and the umbilicus is deep but not perforate at its base. The mouth is vertical, subquadrate and comparatively small. The peristome is incomplete

but joined by an obscure callus. At the left upper corner there is a narrow vertical canal with an obscure tubercle forming its border at either side. There is no trace of a palatal fold. The protoconch has a rather dull surface but the basal whorls are highly polished. The sculpture of the former consists of close-set longitudinal striae. These become stronger on the lower whorls. The colour of the protoconch is dull horny brown, minutely speckled with black. The lower whorls are dirty white with two broad spiral bands of dark chestnut, joined together here and there by irregular vertical streaks of the same colour. The lower band is often hidden, except on the body-whorl, in the suture.

*The Radula.* The teeth are naturally smaller than in the preceding species but appear to be relatively larger as compared with the shell. The whole radula is narrower. The main cusp of the teeth is narrower and more sharply pointed and the transition from laterals to marginals more marked. The central is much shorter than the laterals. The outer marginals are broad and shallow with a large inner pointed cusp and several smaller outer teeth. The formula is 16.7.1.7.16.

*Type-specimen* in the Z.S.I. (Indian Museum), M <sup>12118</sup>.  
*Paratypes* in the British Museum.

*B. gregoriana* is probably related to *B. anceyi* Hilber,<sup>1</sup> from "Panto, Ost-tibet," a locality which Möllendorff (*op. cit.*), corrects to "Ben-to, Yunnan." The shell is, however, smaller and shorter and tapers more towards the apex, and the mouth is more oblique.

## 17. *Buliminus* (Holcauchen) *tubios*, sp. nov.

(Plate 16, Figs. 6, 6a).

The species is evidently very abundant in the gorges in the Yangtse district of the upper Mekong, where it was collected in large numbers at altitudes between 7,000 and 7,500 feet in July. Some specimens were found on red sandstone.

The shell is dextral, has nine whorls and is rather solid, extremely long and narrow, very like a *Clausilia* in appearance. It tapers slightly towards the apex, which is minutely mucronate, from the seventh whorl, the two basal whorls being cylindrical. The suture is narrowly impressed and the whorls except the body whorl, which is constricted in the middle, are distinctly convex. The protoconch is composed of the first four whorls. The first eight whorls increase in size gradually and progressively. The upper part of the body-whorl is larger than

<sup>1</sup> Hilber, *op. cit.*, p. 611, Plate IV, Fig 7. Hilber placed *B. anceyi* provisionally in *Zebrina*, and Möllendorff (*op. cit.*, p. 370) in *Clausiliopsis*, but neither had been able to examine the interior of the shell.

the penultimate whorl but considerably shorter than that whorl and the seventh together. The base is strongly constricted from side to side, and provided with a blunt keel. It descends considerably and turns forwards abruptly, expanding trumpet-wise and leaving a comparatively large oblique, oval umbilicus open. The mouth lies to the left of the middle line and is nearly vertical. It has an oval outline and is surrounded by a flattened and considerably expanded lip, which is only interrupted by a narrow, oblique channel situated in the left upper corner but directed obliquely towards the right. The channel as seen under the lens has a spout-like appearance. There is no internal armature. The sculpture consists of fairly stout, conversely oblique lines, which are crossed by microscopic spiral impressed striae. On the body-whorl the former becomes coarser and almost assume the character of costae. There is a fine impressed spiral line running just below the suture on the upper margin of each whorl. The protoconch varies in colour from luteous to deep chestnut. The rest of the shell is pale bluish grey sometimes tinged and blotched with chestnut. The peristome is cream-colour with a chestnut ring internally.

The *radula* is very like that of *B. gregoriana*, but the cusps of the teeth are longer and rather narrower and the ribbon as a whole is narrower. The central is less different from the laterals, but distinctly shorter than them. The formula is 15·6·1·6·15.

*Type-specimen* in the Z.S.I. (Indian Museum), M <sup>12119</sup>/<sub>2</sub>.  
Paratypes in the British Museum.

This species is evidently related closely to Sturany's *Serina cathaica* var. *egressa*, but the shell is still larger, has a whorl less and is slightly more spindle-shaped, while the peristome is still more expanded. The colour also appears to be different.

Measurements of Shells of New Species of *Buliminus*  
(= *Ena*).

*B. (Mirus) tigricolor.*

Height of shell	..	8·5 mm.
Max. diameter	..	5 mm.
Height of mouth	..	3 mm.
Max. diameter	..	2 mm.

*B. (Petræomastus) latilabrum.*

Height of shell	..	30 mm.	27·5 mm.	26·5 mm.	24·5 mm.
Max. diameter	..	12·5 mm.	11·5 mm.	11·5 mm.	10 mm.
Height of mouth	..	11·5 mm.	8·5 mm.	8·5 mm.	8·5 mm.
Max. diameter	..	6·5 mm.	6·5 mm.	6·5 mm.	5 mm.

<sup>1</sup> Sturany, *Denkschr. K. Akad. Wiss.*, LXX, p. 35, Plate III, Figs. 14-16 (Vienna, 1901).

*B. (Pupinidius) chrysalis.*

Height of shell	..	24.5 mm.	26 mm.	25 mm.	24.5 mm.
Max. diameter	..	14.5 mm.	14 mm.	13 mm.	13.5 mm.
Height of mouth	..	10 mm.	10.5 mm.	10 mm.	10.5 mm.
Max. diameter	..	6.5 mm.	7 mm.	7 mm.	7 mm.

*B. (Holcauchen) gregoriana.*

Height of shell	..	10 mm.	9.5 mm.	10 mm.	10 mm.
Max. diameter	..	3 mm.	3.5 mm.	3.5 mm.	3 mm.
Height of mouth	..	2.5 mm.	2.5 mm.	2.5 mm.	2.5 mm.
Max. diameter	..	1.5 mm.	1.5 mm.	1.5 mm.	1.5 mm.

*B. (Holcauchen) tubios.*

Height of Shell	..	14 mm.	14 mm.	13.5 mm.
Max. diameter	..	3.5 mm.	3.15 mm.	3 mm.
Height of mouth	..	3 mm.	2.5 mm.	2.5 mm.
Max. diameter	..	2 mm.	2 mm.	2 mm.

Family CYCLOPHORIDAE.

19. *Ptychopoma delavayanum* (Heude).

1890. *Myxostoma delavayanum*, Heude, *op. cit.*, p. 127, Plate XXXVI, Figs. 8, 8a, 8b.

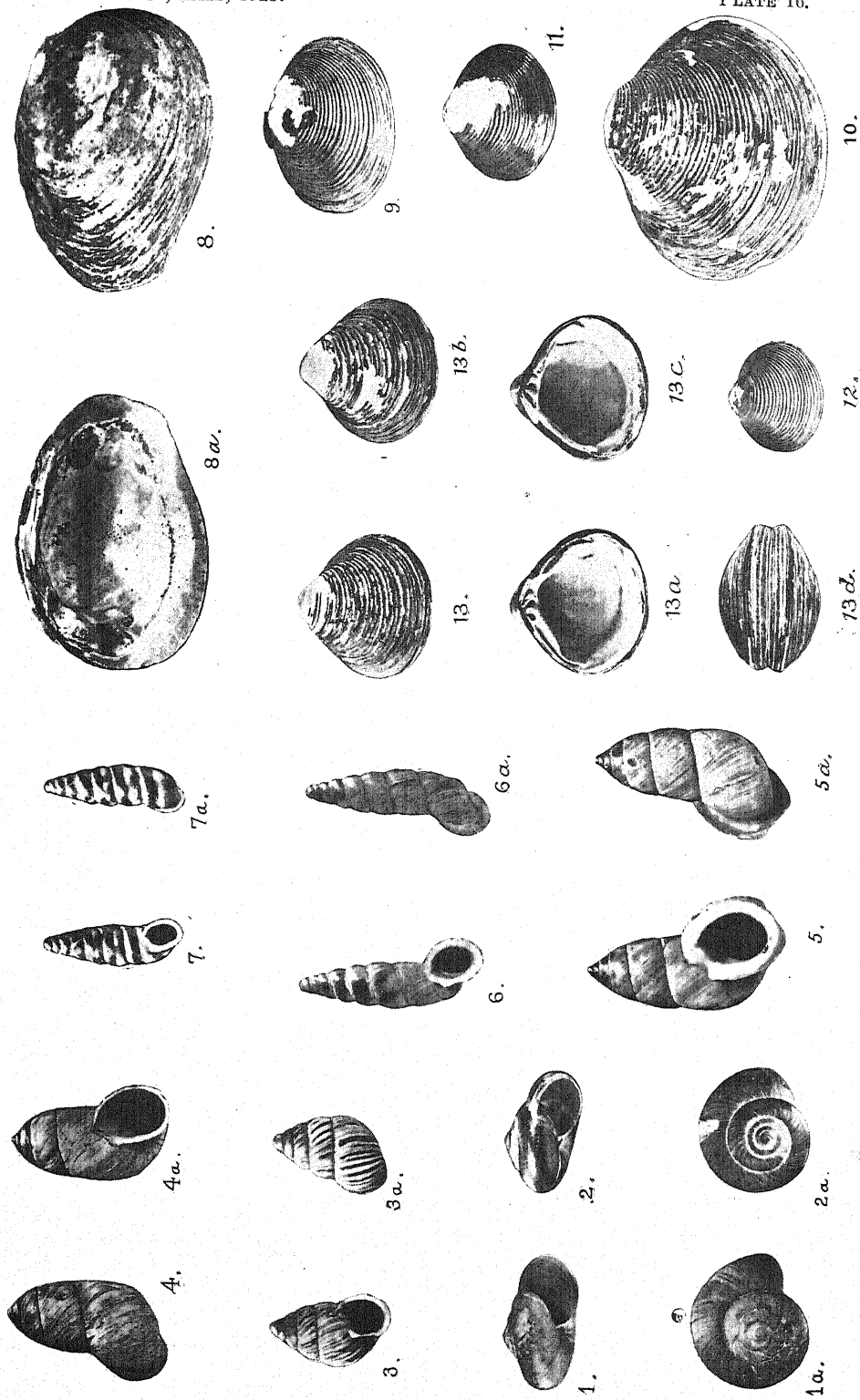
1902. *Ptychopoma delavayanum*, Kobelt, *Cyclophoridae in Das Tierreich*, XVI, p. 81.

A considerable number of shells (mostly with the animal dried in them), from the gorge of the Mekong north of Sha-wa-tsun (altitude 6,200 feet), from the canyon of the Mekong above Lo-atar and from the gorge in granite above Yangtsa (7,000-7,500 feet). 1-10. vii. 23.

In most of the specimens the peristome is less well developed than it is figured by Heude. The radula, which has been extracted for me by Dr. Bains Prashad, is that of a normal Cyclophorid.

The species was described from Tali-fu in Yunnan.





SHELLS FROM YUNNAN.

## DESCRIPTION OF PLATE 16

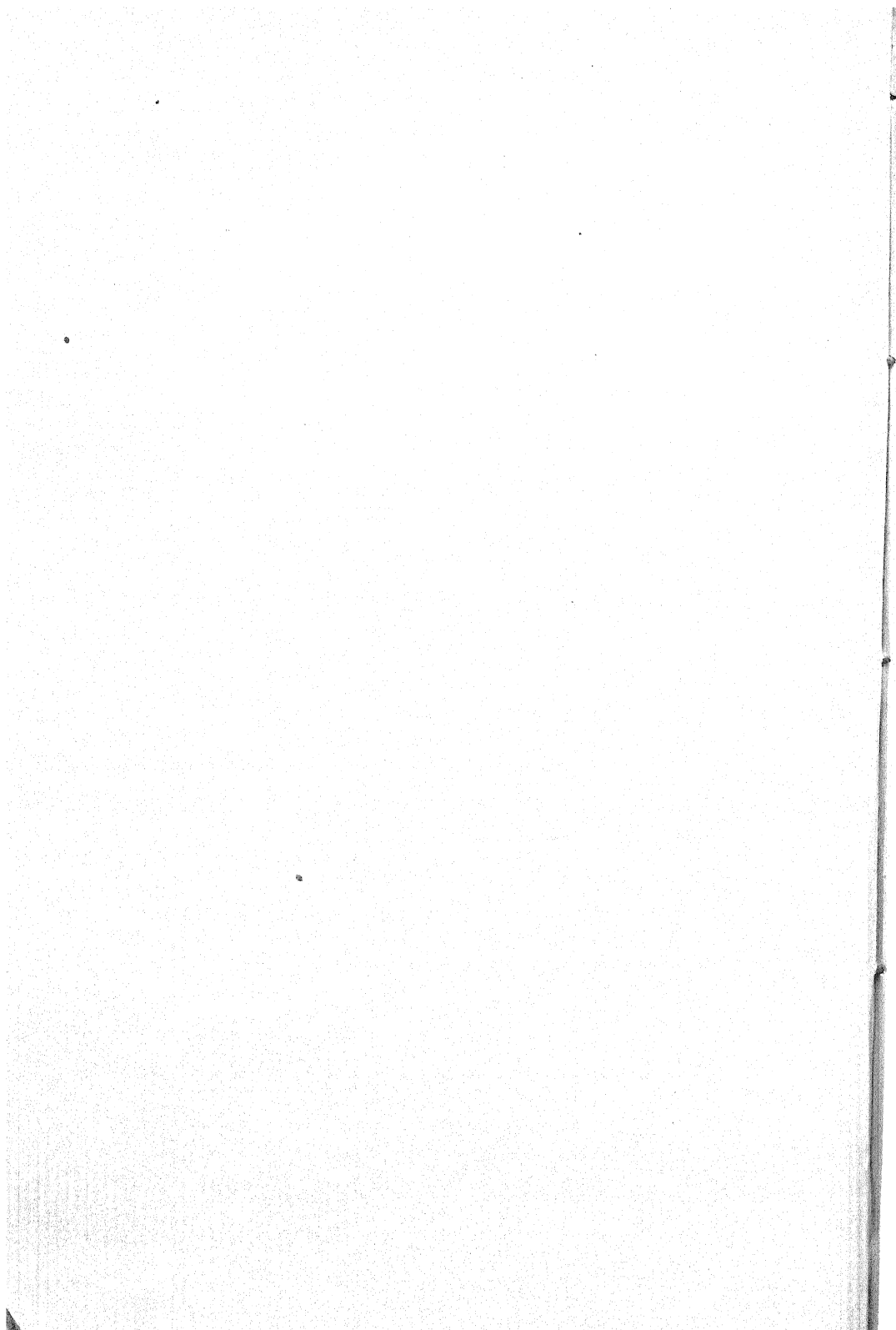
## LAND AND FRESHWATER SHELLS FROM YUNNAN.

*Helicarion resinaceus* Heude subsp. *subresinaceus* Annandale.

- Figs. 1, 1a. Side and upper view of a shell from Canyon of the Mekong above Lo-Atar. Natural size.
- Figs. 2, 2a. Type shell from the same locality as the one reproduced in fig. 1. Natural size.
- Figs. 3, 3a. *Buliminus (Subzebrinus) tigricolor* Annandale. Type-shell from gorge of Mekong above Yangtsa, ventral and dorsal views.  $\times 2$ .
- Figs. 4, 4a. *Buliminus (Pupinidius) chrysalis* Annandale. Type-shell from the gorge above Yangtsa in the Mekong valley; dorsal and ventral views. Natural size.
- Figs. 5, 5a. *Buliminus (Petræomastus) latilabrum* Annandale. Type-shell from upper Yangtsa west of Pung-tsu-la; ventral and dorsal views. Natural size.
- Figs. 6, 6a. *Buliminus (Holcauchen) tubios* Annandale. Type-shell from the gorges of the Yangtsa district of the upper Mekong; ventral and dorsal views.  $\times 2$ .
- Figs. 7, 7a. *Buliminus (Holcauchen) gregoriana* Annandale. Type-shell from the gorge of the Mekong north of Sha wa-tsun; ventral and dorsal views.  $\times 2$ .
- Figs. 8, 8a. *Rhombuniopsis superstes* (Neumayr). Right valve from north-western shores of the Lake Tali; outer and inner views. Natural size.
- Fig. 9. *Corbicula lamarckiana* (Prime). Right valve of a specimen from Pangaloi. Natural size.
- Fig. 10. *Corbicula yunnanensis* Nevill. Right valve of the type-specimen from Manwyne, Yunnan. Natural size.
- Fig. 11. *Corbicula andersoniana* Nevill. Right valve of the type-specimen from Momein, Yunnan. Natural size.
- Fig. 12. *Corbicula ferruginea* Heude. Left valve of a specimen from Chitien valley. Natural size.

*Corbicula praeterita* Heude.

- Figs. 13, 13a. Outer and inner views of the right valve of a specimen from Lake Tali. Natural size.
- Figs. 13b, 13c. Outer and inner views of the left valve of the specimen photographed in figs. 13, 13a. Natural size.
- Fig. 13d. Lower margin of the specimen figured in figs. 13 a-c, showing the greatly thickened edge. Natural size.



37. ZOOLOGICAL RESULTS OF THE PERCY SLADEN  
TRUST EXPEDITION TO YUNNAN UNDER THE  
LEADERSHIP OF PROFESSOR J. W. GREGORY,  
F.R.S. (1922).

AQUATIC GASTROPOD MOLLUSCS.

BY N. ANNANDALE, D.Sc., F.R.S., F.A.S.B., C.I.E., *Zoological  
Survey of India.*

(With Plate 17).

The collection of aquatic snails made by Professor Gregory and his son in Western Yunnan is even more interesting than that of land snails, for it includes numerous specimens (both recent and subfossil) from the great lake Erh-hai, sometimes called Lake Tali, which contains one of the most interesting lacustrine faunas known. It so happens that the Indian Museum is particularly rich in specimens from this lake, for we possess not only the collection of the late Dr. John Anderson, which was described by Nevill, but also a much larger one obtained on two occasions by Dr. J. Coggin Brown of the Geological Survey of India, as well as a few shells of particular importance from the collection of the late Father Heude of Zi-Ka-Wei. Most of Benson's specimens from Cantor's Chusan collection are also in the Museum and as we have in addition shells from another great lake in Yunnan (Kunyang-hai) from the collection of Messrs. Sowerby and Fulton, I am able to give a fairly full account of what is known of the lacustrine and fluviatile gastropods of the province of Yunnan.

The following is a list of the species at present recognized, including those described in this paper. Those of which the names are marked with a star are represented in the Gregory collection. I have not been able to recognize with certainty all the Viviparidae described by Heude, but all are probably forms of the species discussed here.

# LIST OF THE AQUATIC GASTROPODS OF YUNNAN.

## Fam. Rissoidae.

### Subfam. Lithoglyphinae.

*Lithoglyphus taliensis*,\* sp. nov. .. Erh-hai (Subfossil?)

### Subfam. Triculinae.

*Tricula gregoriana*\* Annd. .. Upper Mekong.

### Subfam. Amnicolinae.

*Hydrobioides (Parafossarulus)*  
*delavayanus* (Heude) .. Lan-kong.

## Fam. Delavayidae.

*Delavaya rupicola* Heude .. Hai-sinear Erh-hai.

*Parapyrgula coggini*\* Annd. and

Prashad .. Erh-hai.

*Paraprososthenia gredleri*\* (Neum.) Erh-hai.

*Fenouilia bicingulata*\* Heude .. Lakes of Yunnan.

## Fam. Melaniidae.

*Semisulcospira (?) aristarchorum*  
(Heude) .. Upper Yangtse sys-  
tem.

*Semisulcospira lauta* (Fulton) .. Kun-yang-hai (Yun-  
nan Lake).

*Semisulcospira dulcis* (Fulton) .. Kun-yang-hai (Yun-  
nan Lake).

## Fam. Viviparidae.

*Vivipara quadrata*\* (Benson) .. China.

*Vivipara margaryaeformis* Mansuy S.E. Yunnan (fossil):  
possibly Tonquin

*Vivipara margaryoides* Annd. .. Erh-hai (subfossil).

*Margarya melanoides*\* Nevill .. Erh-hai and Upper  
Yangtse system.

*Margarya monodi* Dautz. and Fisch. S.W. Yunnan.

*Lecythoconcha lecythis*\* (Benson) .. S.E. Assam to Hainan  
and (?) Japan.

*Lecythoconcha lecythoides*\* (Benson) W. Yunnan and Sze-  
chuan to S.E.  
China.

*Lecythoconcha malleata*\* (Reeve) .. W. Yunnan to Japan  
and S. E. China.

## Fam. Limnaeidae.

*Limnaea andersoniana*\* Nevill .. Assam; U. Burma;  
W. Yunnan; Central  
Asia; N.-W. Fron-  
tier of India; Nepal

*Limnaea yunnanensis* \* Nevill .. W. Yunnan, as far  
east as Erh-hai.

Fam. Planorbidae.

*Gyraulus longios*,\* sp. nov. .. Upper Mekong.

Several points in this list are noteworthy. Firstly, we notice the complete absence of Ampullariidae, which are abundant in many parts of Burma and Siam but do not occur in any part of China, where they are apparently replaced by gigantic Viviparidae of the genus *Lecythoconcha*. Secondly, the absence of Melaniidae from Western Yunnan is peculiar. Those which occur in the eastern and central parts of the province are not related to Burmese forms. The most interesting fact, however, is the occurrence of the apparently endemic and highly peculiar lacustrine genera *Delavaya*, *Parapyrgula*, *Paraprososthenia* and *Fenouilia* in the lakes of the province. A peculiar feature of those molluscs is their close resemblance to certain tertiary forms from Central Europe.<sup>1</sup> A similar resemblance has been noticed between the Viviparidae of Yunnan and these of the Pleistocene beds of central and eastern Europe and the Levant. This resemblance is certainly due, as I have demonstrated elsewhere,<sup>2</sup> not to a common ancestry but to convergent evolution, and I am of the opinion that the similarity between the other lacustrine gastropods of the lakes of Yunnan and those of tertiary basins in Europe is probably due to the same cause. Before discussing the matter fully, however, it will be necessary for me to make a more detailed study of the tertiary molluscs, and this is not possible at present in Calcutta.

### Family RISSOIDAE.

#### Subfamily LITHOGLYPHINAE.

#### Genus *Lithoglyphus* Hartmann.

Although this genus has been confused with the indigenous genus *Fenouilia*, at least one true species (*L. liliputanus* Gredler) has already been described from China. The radula<sup>3</sup> has been figured by Dr. Baini Prashad and myself. I have here to describe a new species closely allied to the type-species of the genus, so far as can be seen from the shell alone.

#### *Lithoglyphus taliensis*, sp. nov.

The shell is of comparatively large size and has  $3\frac{1}{2}$  whorls. The body-whorl is comparatively shallow and very oblique,

<sup>1</sup> See Neumayr, *N. Jahrb. f. Min. Geol. u. Pal.*, II, p. 21 (1883).

<sup>2</sup> Annandale, *Proc. Roy. Soc. (B)* XCVI, pp. 60-76 (1924).

<sup>3</sup> *Rec. Ind. Mus.*, XVI, p. 416, Fig. 1b (1919).

expanding considerably towards the mouth, convex below and subcarinate on the periphery. The penultimate whorl is highly convex and considerably deeper than the whorl and a half above it. The apical half whorl is raised and about half as deep as the first complete whorl. The suture is linear and deeply impressed. In ventral view the body-whorl is somewhat elongate and the spire appears minute. The mouth is oblique and comparatively narrow. Its height is considerably more than half that of the whole shell. The columella is feebly arched and its callus poorly developed. The sculpture consists of fine longitudinal striae on the body-whorl, set far apart but becoming more numerous and better developed on the youngest part of the whorl. The surface is highly polished.

Height of shell	..	..	8.25 mm.
Max. diam.	..	..	7 mm.
Height of mouth	..	..	4.5 mm.

*Type-specimen.* M  $12 \pm 0.6$ , Z.S.I. (*Ind. Mus.*).

*Locality.* Shang-tung near N.W. shore of Erh-hai (Lake Tali), Yunnan (? subfossil) in raised beach.

The single shell has the lip incomplete. It resembles that of the European *L. naticoides* Fér. closely, but the spire is a little higher, the suture more impressed and the body-whorl not so evenly convex.

#### Subfamily AMNICOLINAE.

I include in this subfamily the genera separated by some authors into Amnicolinae and Bithyniinae, as they are linked together by two subgenera of *Amnicola* (*Alocinma* and *Pseudamnicola*) both of which have a spiral but calcareous operculum. The name Amnicolinae has undoubted priority.

#### Genus *Hydrobioides* Nevill,

##### Subgenus *Parafossarulus* Annandale.

1924. *Parafossarulus*, Annandale, *Journ. Malac. Soc.*, XVI, p. 28.

I have recently proposed this subgenus for the Chinese species which have the shell-sculpture (if present) spiral and lack a varix on the lip. Certain Burmese forms will also have to be included in it, the name *Hydrobioides* (s.s.) being confined to the type-species (*H. turrita*), to the various forms of *H. nassa* and to a new species which I hope to describe shortly. The shell resembles that of *Pachydrobia* Crosse and Fischer, but the operculum and the male organ are very different.

#### *Hydrobioides* (*Parafossarulus*) *delavayanus* (Heude).

1910. *Bithynia delavayana*, Heude, *Mém. Nat. Hist. Emp. Chinois*, I, p. 170, Plate XLII, Fig. 5.

I have not seen this species, which is only known from Heude's description and figures.

Subfamily TRICULINAE

1924. Triculinae, Annandale, *American Journ Hygiene*, Monographic Ser. III, p. 276.

I have recently proposed this new subfamily for the genera *Tricula* Benson, *Taihua* Annand. and *Oncomelania* Gredler.

Genus *Tricula* Benson.

*T. gregoriana* is figured in the paper cited Plate XXXVI, Figs. 1, 2.

*Tricula gregoriana* Annandale.

*Shell* small, solid, slender, elongate, ovate, conoidal, acuminate, naturally pale fulvous but covered with a blackish deposit, with strong longitudinal striae, with  $6\frac{1}{2}$  whorls; the suture impressed, not very oblique, with the upper margin of the whorls narrowly flattened outside it: the body-whorl in dorsal view about as deep as the two preceding whorls together; the umbilicus imperforate; the mouth ovate, oblique, sharply pointed and slightly retroverted above; the peristome thin, continuous.

Operculum horny, thin, paucispiral, ovate.

*Type-specimen.* M  $12\frac{2}{3}$  mm, Z.S.I. (Paratypes sent to the British Museum.)

*Locality.* Cliff above the Mekong at the Awa bend, Yunnan; altitude 6,400 feet.

Family DELAVAYIDAE, nov.

I propose this new family for the peculiar Chinese molluscs of the genera *Delavaya* and *Fenouilia* Heude, *Parapyrgula* Annandale and Prashad and *Paraprososthenia* Annandale. All these genera are apparently endemic in Yunnan as living forms, but *Paraprososthenia* is also known as a tertiary fossil from the Northern Shan States of Burma.

The family may be defined as follows:

Small pectinibranchiate gastropods of lacustrine habitat with thin but porcellaneous shells of turritid or trochiform (or neritiform) shape and covered with a thin adherent, but coriaceous periostracum of a pale olivaceous colour. Operculum thin, paucispiral, ovate. Radula with the dental formula 2:1:1:1:2; the central tooth unicuspid without lateral denticulations but with a series of basal denticulations at either side; the laterals with a single very broad and prominent cusp, with or without small subsidiary denticulations; the marginals with a homogeneous series of sharp

denticulations. Gill-filaments long, extending almost all the way across the roof of the branchial chamber. Male intermittent organ absent (? always).

*Type-genus.* *Delavaya* Heude.

*Geographical and palaeontological range.* The lakes of Yunnan and possibly Cambodia; also the tertiary lake-beds of the Northern Shan States of Burma.

#### Key to the Genera of Delavayidae.

1. Shell trochiform .. .. *Fenouilia*.
2. Shell turritid, conical or conoidal.
  - A. Shell smooth, conoidal. Lateral teeth of radula without subsidiary denticulations .. *Delavaya*.
  - B. Shell with a spiral ridge or ridges. .. ..
    - I. Shell with a single smooth peripheral ridge. Lateral teeth of radula with lateral denticulations .. *Parapyrgula*.
    - II. Shell with more than one tuberculate spiral ridge .. *Paraprososthenia*.

Possibly the Cambodian genus *Lacunopsis* Deshayes also belongs to this family. The shell is neritiform with the spire lateral in position and with a tooth on the columella. The radula (figured by Poirier in *Journ. Conchyliol.*, XXIX, p. 6, Plate III, Fig. 5, 1881) has a unicuspid central and an enlarged cusp on the laterals with subsidiary denticulations.

I have examined good series of the shells of all the Yunnanese genera and the radula of all but *Paraprososthenia*; also the soft parts of *Fenouilia* and dried specimens of *Delavaya* and *Parapyrgula*.

The texture of the shell and periostracum and the structure of the radular teeth are particularly characteristic, as is also, in all probability, the absence of an intermittent organ in the male. In this last character, and also to some extent in the structure of the radular teeth, the family approaches the North American Pleuroceratidae, in which Dr. Baini Prashad and I included three of the genera provisionally in 1919.

#### Genus *Delavaya* Heude.

1889. *Delavaya*, Heude, *Journ. Conchyliol.*, XXXVIII, p. 46.

#### *Delavaya rupicola* Heude.

1890. *Delavaya rupicola*, Heude, *Mém. Hist. Nat. Emp. Chinois*, I, p. 172, Plate XXXIII, Figs. 8-9, 10 and 10a.
1919. *Delavaya rupicola*, Annandale and Prashad, *Rec. Ind. Mus.*, XVI, p. 423.

This species, which was described from the lake Hai-si near Erh-hai in Yunnan, is not represented in the Gregory collection, but I have examined a series of shells from that of Heude. From one of these my assistant Mr. Srinivasa Rao has extracted the radula. It agrees fairly well with Heude's figure, except that three basal denticulations are present on each side of the central tooth, whereas he showed a simple ridge in this position. The laterals differ from those of *Parapyrgula* in having no subsidiary denticulations at the sides of the cusp.

Heude published figures of the branchial lamellae and of the head. He shows the latter as bearing on the neck behind the eyes an intromittent organ apparently like that of certain "Hydrobiidae," but as his figures were drawn from dried specimens no great reliance can be placed upon them. It seems to me not improbable that the so-called penis was really a fold of the mantle.

The species (and the genus) is known only from a small lake in the neighbourhood of Tali-fu.

#### Genus *Parapyrgula* Annandale and Prashad.

1919. *Parapyrgula* (subgenus of *Paraprososthenia*), Annandale and Prashad, *Rec. Ind. Mus.*, XVI, pp. 416, 420, Figs. 1D, 2.

The radula of the monotype of this genus differs in so important a character (the presence of subsidiary denticulations on the cusp of the lateral teeth) from that of *Delavaya* that they must be regarded as distinct. The structure of the suture of the shell is also very different and its perfectly conical outline with a single smooth spiral ridge is characteristic.

The shell differs from that of *Pyrgula* (including Neumayr's subgenus *Diana*) in its much more expanded mouth and particularly in the structure of the periostracum, which in *Pyrgula* is quite smooth. Nothing seems to be known of the anatomy of that genus, but the radula in the apparently allied *Pyrgulopsis* of North America has many fine denticulations on all the teeth.<sup>1</sup>

#### *Parapyrgula coggini* Annandale and Prashad.

A large series of empty shells, with equally large or even larger series of those of *Fenouilia bicingulatu* and *Paraprososthenia gredleri*, was obtained from the earth of a raised beach at Shang-kuan near the N.W. shore of Erh-hai. Dr. Coggin Brown collected living specimens on the lower surface

<sup>1</sup> See Walker, *Univ. Michigan Mus. Publ.* No. 6, p. 30, Fig. 102 (1918).

of stones in the lake at the same place. The specimens show little variation.

Both this and the next genus are known only from Erh-hai, at any rate living.

Type-specimen. M <sup>11598</sup>/<sub>2</sub>, Z.S I. (Ind. Mus.).

### Genus *Paraprososthenia* Annandale.

1898. *Prososthenia*, Neumayr (nec 1869), *Wiss. Ergebn. Reise Béla Széchenyi*, II, p. 653.

1919. *Paraprososthenia*, Annandale, *Rec. Geol. Surv. Ind.*, L, p. 209.

1919. *Paraprososthenia*, Annandale and Prashad, *Rec. Ind. Mus.*, XVI, p. 42).

Unfortunately we still lack information about the operculum, radula and soft parts of the genus, but the structure of the periostracum, the texture of the shell and the character of the lip, which is thin and somewhat expanded, are so like those of *Parapyrgula* that a close relationship is indicated.

The shell differs from that of the Kainozoic European *Fossarulus* in its thin outer lip and somewhat expanded mouth.

### *Paraprososthenia gredleri* (Neumayr).

1883. *Diana gredleri*, Neumayr, *N. Jahrb. f. Min. Geol. u. Pal.*, II, p. 24.

1898. *Prososthenia* (?) *gredleri*, id., *op. cit.*, p. 654, Plate IV, Figs. 2, 3.

Professor Gregory's expedition obtained many specimens, as already stated, from earth near the N.W. shore of Erh-hai and I have found in the collection of the Zoological Survey of India a number of fresher shells from the same place collected by Dr. Coggin Brown. Among these there are some very young shells in which the protoconch is fairly well preserved. It differs considerably from that of the Burmese fossil *P. minuta*, in which the spiral sculpture is tuberculate from its commencement, whereas in *P. gredleri* it has the character of a smooth and prominent ridge on the 2nd, 3rd and 4th whorls. The extreme apex is missing in all the specimens.

The periostracum is of a pale green colour, thin but thrown into characteristic vertical folds, especially over the prominent parts of the sculpture.

### Genus *Fenouillia* Heude.

1889. *Lithoglyphus*, Neumayr (nec Hartmann), *op. cit.*, p. 655.

1889. *Fenouillia*, Heude, *op. cit.*, p. 46.

1919. *Fenouillia*, Annandale and Prashad, *op. cit.*, p. 417.

### *Fenouillia bicingulata* Heude.

1889. *Fenouillia bicingulata*, Heude, *op. cit.*, p. 46.

1890. *Fenouillia bicingulata*, id., *op. cit.*, p. 172, Plate XXXIII, Fig. 11.

1898. *Lithoglyphus Kreitneri*, Neumayr, *op. cit.*, p. 655, Plate IV, Figs. 7, 8.  
 1904. *Jullienia carinata*, Fulton, *Journ. Malacol. Soc.*, XI, p. 521, Plate IV.  
 1919. *Fenouilia kreitneri*, Annandale and Prashad, *loc. cit.*, Fig. 1C (radula).

This appears to be the most widely distributed species in the family. It has been described under three different names from three of the lakes of Yunnan, from Erh-hai, from Hai-si in the same district and from Kun-yang-hai near Yunnan-fu. I have nothing to add to what was said by Dr. Baini Prashad and myself in 1919.

From *Jullienia* it differs in the structure of the animal and the radula as well as of the shell.

#### Family MELANIIDAE (Tiaridae).

This family, as I have already pointed out, is poorly represented in the fauna of Yunnan and the only specimen in the Expedition's collection is a distorted shell of *Melanoides* from Bhamo in Burma. The three species recorded from the province all seem to belong to the genus *Semisulcospira* (Boettger),<sup>1</sup> but I have not seen Heude's *Melania aristarchorum*.<sup>2</sup> I have, however, examined shells of *M. dulcis* and *M. lauta* Fulton<sup>3</sup> from Kun-yang-hai, both of which certainly belong to the genus. The operculum of the former is somewhat peculiar; it is so broadly ovate as to be almost subcircular, but the structure is that characteristic of *Semisulcospira* and *Melanoides* resembling that of *S. libertina* (Gould), the type-species of *Semisulcospira*, much more closely than it does that of *M. tuberculatus* (Müller), the type-species of the other genus.

#### Family VIVIPARIDAE.

##### Genus *Vivipara* (auct.).

The majority of the Chinese species of *Vivipara* belong to a peculiar group which we may call *Viviparae Angulares*. The shell is elongate and more or less conical, rimate and somewhat flattened at the base, acuminate, usually rather thick. Solid, smooth or almost smooth spiral ridges are frequently present upon it and at least traces of them can always be distinguished. The colour is olivaceous, often with black vertical streaks; dark spiral bands are absent. The radula and operculum agree with those of *V. vivipara* and Mr. Srinivasa Rao, who has dissected several Chinese forms, finds no constant anatomical peculiarities, except that the number of advanced embryos in the uterus is small.

<sup>1</sup> Boettger, *Jahrb. Malak. Ges.*, XIII, p. 4 (1886). See also Annandale, *Journ. Malac. Soc.* XVI, pp. 30-33 (1924).

<sup>2</sup> Heude, *op. cit.*, p. 165, Plate XLI, Fig. 26 (1890).

<sup>3</sup> Fulton, *Journ. Malac. Soc.*, XI, pp. 51, 52, Plate IV, Figs. 2, 4 (1904).

**Vivipara quadrata** (Benson).

(Plate 17, Fig. 2).

1842. *Paludina quadrata*, Benson (under Cantor), *Ann. Mag. Nat. Hist.*, IX, p. 487.1877. *Paludina angularis* (in part), Nevill, *Cat. Moll. Ind. Mus.*, E., p. 31.

This appears to be the common *Vivipara* of China. It has many forms, which in large series can often hardly be distinguished, and seems to be in much the same evolutionary state as *V. bengalensis*. Many authors have confused it with *V. angularis* (Müller),<sup>1</sup> but it differs in the consistency of the shell, which is always much more porcellaneous, in its less conical form, in its thinner and sharper columellar fold and especially in the sculpture of the shell, which always shows traces of spiral ridges but has never the three sharp, clean-cut ridges on each whorl (above the periphery of the body-whorl) referred to by Müller in his original description. The two species both occur at Canton, from the rivers approaching which *V. angularis* was originally described. Photographs 1, 2 on Plate 17 illustrate these differences clearly.

The typical form of *quadrata* (Plate 17, Fig. 2) from S.E. China is very elongate and often almost subcylindrical. It varies, however, both in shape and size; its distinctive character is the vertical flattening of the whorls to which Benson referred in his specific name. This feature is much less marked in other forms of the species. I do not understand Benson's statement that the eyes are on pedicels while in other *Viviparae* they are sessile. I can, indeed, see no difference in this respect in the forms of which I have examined the animal, except that the pedicels are perhaps a little narrower in the Chinese than in the Indian and European forms.

In the collections from Yunnan which I have examined there are no specimens of the typical form of the species, but three forms are present which are sufficiently distinct to be given names, although intermediate individuals occur both between them and approaching the *forma typica*. These I call *minor* (Nevill), *dispiralis* (Heude) and *limnophila* (Mabille). My *V. margaryoides* seems to be specifically distinct although allied to the form *dispiralis*. The reticulate shell sculpture is particularly characteristic.

**Form minor** (Nevill).

(Plate 17, Fig. 5).

1885. *Paludina aeruginosa* var. *minor*, Nevill, *Hand List Moll. Ind. Mus.*, II, p. 23.

<sup>1</sup> *Verita angularis*, Müller, *Hist. Verm.*, p. 187 (1774). See also Walker, *Nautilus*, XXXII, p. 114, Plate VIII, Figs 4, 5 (1919).

This is a small, conoidal, comparatively thin-shelled form with the spiral ridges indefinite and variable, but never prominent and the mouth of the shell relatively large. The shell when fresh is of a bright olive-green colour, sometimes with a greyish tinge and with occasional black vertical streaks.

The type specimens (No. 2321, *Ind. Mus.*) are from Kulang-su in Amoy, but the form seems to be common in the mountains of western Yunnan. It was collected by the Percy Sladen Trust Expedition at several places on the upper Mekong and the upper Salween between the Burmese frontier and Tali-fu at altitudes between 6,000 and 7,000 feet, and occurs both in rice-fields and in streams, the latter probably sluggish.

#### Form *limnophila* Mabilie.

(Plate 17, Fig. 4).

1886. *Vivipara limnophila* and *V. severenda*, Mabilie, *Bull. Soc. Mal. France*, III, pp. 72, 74, Plate II, Figs. 4, 5.

This form is distinguished from the form *minor* chiefly by its larger size and much thicker shell. The size of the mouth is variable. The series before me from Erh-hai offers a complete transition between Mabilie's two supposed species, but his figure of *limnophila* is of an exceptionally large shell and I have seen none so big. The shells in our collection are all from raised beaches.

The form is apparently endemic in Erh-hai but I know nothing of its ecology; some specimens of *dispiralis* from a swampy lake north of Ho-chang approach it closely.

#### Form *dispiralis* (Heude).

(Plate 17, Fig. 3).

1890. *Paludina dispiralis*, Heude, *Mém. Nat. Hist. Emp. Chinois*, I, p. 175, Plate XXIX, Fig. 12.

This is a large, elongate, acuminate, more or less conoidal form with a thick shell. Both the outline of the spire and the prominence of the sculpture vary considerably, but the latter is never very definite and it is almost always possible to see round the periphery in a good light a double spiral ridge, which doubtless suggested the name. The shell is less cylindrical than that of *quadrata* (*s.s.*) and has the whorls more convex. Intermediate specimens between *dispiralis* and *limnophila* are common.

Heude says that this form occurs in the waters of southern Yunnan. Numerous specimens were obtained by Dr. Coggin Brown and also by the Gregory expedition in a raised beach at Shang-kuan on the N.W. shore of Erh-hai (some of these have the periostracum still present in places) and also (fresh) from the swampy lake north of Ho-ching on the

Yangtse system (7,800 feet). The form is thus evidently of wide distribution in the province.

*Vivipara margaryoides* Annandale.

(Plate 17, Figs. 6, 7).

1924. *Vivipara margaryoides*, Annandale, *Proc. Roy. Soc. London*, (B) XCVI, p. 64, Fig. 4A.

The shell is thick, of large size, much higher than broad and of turritid form, the body-whorl being relatively broad, the spire much narrower but approximately of the same height. The body-whorl is much broader than high in dorsal view, somewhat oblique and distinctly convex. In ventral view the upper part is convex but below the umbilicus, which is closed or minutely rimate, it recedes considerably. There is no peripheral keel or angle. The aperture is somewhat flame-shaped, pointed and retroverted above, broadly rounded below, and oblique in both planes. It is not much higher than broad. The columella is arched and very oblique, with its callus narrow but stout and expanding a little below. The peristome is complete. The outer lip is thick, but not more so than the rest of the shell. The spire has an elongate, distinctly conoidal form, and consists of  $5\frac{1}{2}$  to  $6\frac{1}{2}$  whorls. The apex is minutely flattened. The lowest three whorls are distinctly convex. The suture is narrowly impressed and not very oblique, always more or less irregular towards the apex. The surface of the shell is highly polished and there are no spiral ridges or rows of tubercles,<sup>1</sup> but at any rate on the body-whorl close set, outwardly curved, somewhat irregular, coarse longitudinal striae or fine costae are visible to the naked eye. These are also present but finer on the rest of the shell and are crossed on the spire by numerous fine impressed spiral lines, which give the surface a minutely reticulate appearance.

*Measurements of Shells.*

	1 (type)	2	3	4	5	6	7
Height . .	47.5	imperfect	44.75	44	43	42	41.5
Max. diameter . .	29.5	32	28.5	27.5	26	26	27.25
Height of mouth . .	19.25	22	19.5	19.5	20	18	17.5
Max. diameter . .	14.75	16	13	13.5	14.5	13	12.5

<sup>1</sup> In young specimens faint traces of spiral ridges can sometimes be detected.

*Type-specimen.* M  $\frac{12.10}{2}$  Z.S.I. (*Ind. Mus.*).

*Locality.* Lake Tali (Erh-hai), Yunnan. Apparently sub-fossil.

This species seems to be very closely allied to *V. margaryaeformis* Mansuy,<sup>1</sup> found fossil in the dry lake-basin of Mong-tsu in Yunnan, but has the body whorl relatively broader and the spire more distinct. Except for the smooth and polished surface of the shell it would undoubtedly be regarded as a *Margarya*.

#### Genus *Margarya* Nevill.

1877. *Margarya*, Nevill, *Journ. Asiat. Soc. Bengal*, XLVI (2), p. 30.

1909. *Margarya*, Kobelt, *Paludina*, (n.f.), *Conch. Cab.*, p. 187. Plates XXXVII, XXXVIII.

#### *Margarya melanoides* Nevill.

1905. *Margarya melanoides* with varr. *Delavayi*, *carinata*, *Francheti* and *tropidophora*, Dautzenberg and Fischer, *Journ. Conchylol.*, LIII, pp. 421-425.

1918. *Margarya melanoides* (in part), Mansuy, *Bull. Serv. Geol. Indochine*, III, fasc. 3, p. 2, Plate II, Figs. 4-6, 9.

Professor Gregory obtained specimens both at Erh-hai and from a swampy lake north of Ho-ching on the Yangtse drainage (7,500 feet). Dautzenberg and Fischer record its occurrence with the succeeding species, but I am doubtful as to the identity of their specimens.

*Type-specimen.* 2286, *Ind. Mus.*

#### *Margarya monodi* Dautz. and Fischer.

1905. *Margarya melanoides* varr. *Monodi*, *Mansuyi*, *obsoleta*, Dautzenberg and Fischer, *op. cit.*, pp. 423, 524, figs. 1-5.

1918. *Margarya melanoides* (in part), Mansuy *op. cit.*, p. 2, Plate I, Figs. 9-11, Plate II, Figs. 7, 8.

These forms seem to me to be specifically distinct from *M. melanoides*. The shell is ornamented with regular, smooth, spiral ridges, which may be obsolete; the body-whorl is relatively narrow and the spire much exerted and more or less cylindrical.

The species occurs, living and fossil, in S.W. Yunnan.

#### Genus *Lecythoconcha* Annandale.

1920. *Lecythoconcha*, Annandale, *Rec. Ind. Mus.*, XIX, p. 114.

The genus is distinguished from *Vivipara* mainly by the structure of the mantle. The shells are large, thin, globose or

<sup>1</sup> Mansuy, *Bull. Serv. Geol. Indochine*, III, fasc. III, p. 3, Plate I, Figs. 1-7; Plate II, Figs. 1-3 (1918). This form is possibly identical with *V. ratei* Crosse and Fischer f. *elongata*, Dautzenberg and Fischer. *Journ. Conchylol.*, LIII, p. 420, Plate X, Fig. 18 (1905).

conical, of a greenish colour (which turns brown or black on exposure) and normally without dark spiral bands. The operculum has a well-defined pit on the external surface corresponding to a boss or tubercle on the internal surface and the muscular scar is poorly developed. The radula has no very characteristic features, but the inner lateral denticulations of the lateral teeth exhibit a curious but inconsistent tendency to become bifid. I have seen this in Chinese and Japanese species as well as in the type-species from Manipur.

Three distinct but closely allied species are found in Yunnan and occur in the Gregory collection. They may be distinguished as follows:—

- I. Shell ovate, at least 1·7 times as high as broad, with the upper surface of the whorls convex and the mouth ovate and projecting little beyond the outline of the upper part of the body-whorl . . . *L. lecythoides*.
- II. Shell more globose, not more than 1·4 times as high as broad, with the upper surface of the whorls distinctly flattened and the mouth projecting considerably beyond the outline of the upper part of the body-whorl.
  - A. Shell decorated with numerous fine, distinct spiral linear ridges *L. malleata*.
  - B. Shell without such ridges . . . *L. lecythis*.

As these forms remain distinct over a very broad area, while exhibiting a wide range of variation in themselves, it seems better to regard them as species rather than varieties, as some conchologists have done. There seems to be very little anatomical differentiation in the genus.

In Yunnan and in China generally, as I have already pointed out, the species of this genus completely replace the "apple-snails" or Ampullariidae, which are the largest fresh-water Gastropods in Peninsular India east of the Punjab and also in Burma. In the valley of Manipur, in which *L. lecythis* is one of the dominant forms, the Ampullariidae are scarce and have only been found in the immediate neighbourhood of Imphal, where they may have been introduced. They also appear to be scarce in the eastern parts of Upper Burma. The Ampullariidae have a profoundly modified respiratory apparatus which fits them for long periods of aestivation and hibernation out of water and permits them to breathe air when living amidst congested vegetation in shallow water. *Lecythoconcha*, the shells of some species of which closely resemble those of *Pachylabra* (the Ampullariid genus in which most of the Indian Ampullariidae are included), exhibit no such modification, but the muscular structure of the edge of the mantle enables the orifice of the branchial cavity to be closed tightly. This may be useful not only in excluding

parasitic leeches, as it undoubtedly does, but also in retaining water in the cavity when the animal is aestivating or hibernating. Certain forms of *L. lecythis* are known to bury themselves in the mud in dry weather and to be capable of prolonged existence in a torpid state.

*Lecythoconcha lecythis* (Benson).

1921. *Lecythoconcha lecythis*, Annandale, *Rec. Ind. Mus.*, XXII, pp. 247 (Fig. 11), 545, 552, 553, 554, Figs. 3C, 6A, 7A, Plates V, VI, Figs. 1, 2.

The protoconch of this species is very characteristic (*op. cit.*, p. 247, fig. 11). Its apex is depressed and concave and the first complete whorl at first projects upwards and then descends.

The specimens collected by the Sladen Trust Expedition all belong to the small rice-field phase (*ampulliformis* Eydoux) and there are many specimens of the same phase from western Yunnan in the Indian Museum. We have also a perfectly typical shell of the large marginal phase from Erh-hai (J. Coggin Brown coll.). This probably marks the eastern limit of the range of the larger phases of the species, the smaller phase of which extends from the upper waters of both the Chindwin and the Irrawadi to Hainan and possibly Japan.

*Type-specimens.* 2300, *Ind Mus.*

*Form crassior*, *nom. nov.*

1909. *Vivipara* [*chinensis* (?) var.] *compacta*, Kobelt, *Paludina, Conch. Cab. (n.f.)*, p. 113 (in part), Plate XVIII, Fig. 8, *nec* Nevill *Hand List Moll. Ind. Mus.*, II, p. 20 (1885).  
1890. *Paludina lecythoides*, Heude (*nec* Benson), *Mém. Hist. Nat. Emp. Chinois*, I, p. 174, Plate XXIX, Fig. 6.

Several specimens from a pool in a rice-field at Yangchang (Salween system), altitude 5,500 feet and some from Howan on a tributary of the Mekong (west bank), altitude 5,300 feet. Also known from Bhamo in Burma. The form, therefore, occurs on the upper waters of the three western rivers of Yunnan.

There has been confusion between this form and Nevill's *Paludina chinensis*, var. *compacta*. The latter is a form of *Vivipara quadrata* and was described from Formosa, whereas Nevill rightly identified specimens from Bhamo and Yunnan as *L. lecythis*. Unfortunately, however, shells of both the *Vivipara* and the *Lecythoconcha*, were sent to Kobelt, who called those from Bhamo *compacta* and those from Formosa *formosensis*, regarding both as probably mere varieties of "*Vivipara*" *chinensis*. He went further, indeed, for the type-species of his *formosensis* actually belongs to the type-series of Nevill's much earlier *compacta*. Kobelt's figure of *compacta*, from a shell from Hainan, is accurate for my new form, whereas

his figures of *formosensis* (*op. cit.*, Plate LXXVII, Figs. 6, 7) represent Nevill's *compacta*. I have both series of specimens before me. The specimens from Formosa have the operculum of a *Vivipara* and those from Bhamo that of a *Lecythoconcha*.

*Type-specimen.* M  $\frac{12}{3} \frac{25}{3}$ , Z.S.I. (*Ind. Mus.*).

*L. lecythoconcha* f. *crassior* differs from all phases of the *forma typica* of the species in its thicker shell and less projecting mouth. It is probably the form figured erroneously by Heude as *P. lecythoides* Benson. If so, its range extends from Chusan and Hainan to Western Yunnan and Bhamo in Upper Burma.

### *Lecythoconcha lecythoides* (Benson).

(Plate 17, Fig. 8.)

1842. *Paludina lecythoides*, Benson, *Ann. Mag. Nat. Hist.*, IX, p. 488.  
 1855. *Paludina lecythoides*, Benson, *Journ. Asiat. Soc., Bengal*, XXIV (2), p. 130.  
 1890. *Paludina fluminalis, longispira, ventricosa*, Heude, *op. cit.*, pp. 174, 175, Plate XXXIX, Figs. 3-4, 5.

This species is not identical with the *Paludina chinensis*, originally figured in Griffith's *Animal Kingdom* (Vol. XII, Plate I, Fig. 5: 1834), but differs considerably in outline, in colour, in the shape and inclination of the mouth and probably in the structure of the protoconch which, however, is not shown in the figure cited. This figure, on the other hand, agrees very closely with that published by Heude of his *P. diminuta* (*op. cit.*, Plate XXXIX, Fig. 9) and appears to represent a form closely allied to the same authors *P. catalayensis*.

There are three specimens in the Indian Museum from Cantor's collection labelled "*Paludina lecythoides*, Chusan Type" by Benson. One is large but broken and abnormal both in colouration (in its irregular dark spiral bands) and in the form of the whorls. The other two are considerably smaller and of a bright olivaceous green shade with longitudinal dark streaks. One, which I select as lectotype, has a height of 43.5 mm., with a maximum transverse diameter of 33.5 mm. The mouth of the shell is 23.5 mm. in maximum height and 17.5 mm. in maximum width. The protoconch is very characteristic. It is much more produced than that of the allied forms discussed here. The first  $2\frac{1}{2}$  whorls, indeed, form a very distinct little conical projection. It has not the roughened surface of the protoconch of *L. malleata* nor the apical concavity of that of *L. lecythis*.

Shells from Erh-hai and from a swampy lake north of Ho-ching are much larger than the lectotype, from Chusan but otherwise similar. They exhibit considerable individual variability, however, and some approach Heude's *P. longispira*, which may perhaps be regarded as a distinct form, others his *P. ventricosa*, while the majority are nearest his *P. fluminalis*.

From the true *L. chinensis* they evidently differ in their acuminate apex, much thinner substance, paler colour and less oblique and more expanded mouth. These features also distinguish them from the forms *catayensis* and *ussurensis* (of both of which I have good series before me) and they have not the angulate body-whorl of the larger Japanese forms.

*Lectotype*, 2332, *Ind. Mus.*

***Lecythoconcha malleata* (Reeve).**

(Plate 17, Fig. 9.)

1864. *Paludina malleata*, Reeve, *Paludina, Conch. Icon.* XIV, Plate V, Fig. 25.

1909. *Vivipara malleata*, Kobelt, *Paludina, Conch. Cab. (n.f.)*, p. 104, Plate XVII, Figs. 8-13 (not Plate XV, Figs. 8, 9).

This is a much more constant species than the other two discussed here and its wide geographical range exhibits little variation except in sculpture. Its range extends from the upper Yangtse to Japan. I have examined large series from both countries.

The shell is always comparatively small and broad in proportion to its height. Its sculpture and the form of its protoconch are characteristic. The latter, which is often remarkably complete, even in old shells, in Yunnan, is very prominent and consists approximately of a whorl and a half but merges gradually into the younger parts of the embryonic shell. The apex is minutely concave and the tip of the apical half-whorl blunt and distinct. Even the protoconch is minutely roughened though somewhat shining, and the remainder of the shell is ornamented with a reticulate sculpture consisting of numerous fine vertical and spiral striae. This is most conspicuous on the 2nd, 3rd and 4th complete whorls of the spire. It becomes somewhat obscure on the basal whorl (5th) of the spire and still more so on the body-whorl. On the last, however, there is always a series of fine, linear, spiral ridges which under the microscope have an irregular, often almost moniliform appearance. In some specimens there is a linear peripheral keel on the body-whorl. There are also as a rule a number of coarser varices on this whorl and similar varices sometimes occur on the whorls of the spire. They have a blackish colour. In dry shells the general colour is deep brown, with a purplish tinge on the apical whorls, but the fresh shell is green.

In specimens from Yunnan the sculpture is better developed than in most Japanese shells, but I have seen some from the province of Omi in which it is almost as prominent as in many from Yunnan. The highly sculptured Chinese form may be known as f. *occidentalis*, nov.<sup>1</sup>

<sup>1</sup> Type-specimen. M 12430, Z.S.I. (*Ind. Mus.*).

All the specimens taken by the Gregory expedition are from the upper Yangtse system and I have no evidence for the occurrence of the species further west. Precise localities are Ho-ching (7,800 feet) and Shihku (6,200 feet). In Japan the species occurs at low levels and is common round Lake Biwa, but not in the lake itself so much as in rice-fields, etc. Most of the Yunnan specimens are from a swampy lake.

### Family LIMNAEIDAE.

#### Genus *Limnaea* (auct.).

The Chinese species of this genus need revision and there can be no doubt that far too many have been described. This, indeed, is so in all countries. Fortunately I have the type-specimens of the two Yunnan species before me. One of these species occurs also in Indian territory and has been very fully considered by my assistant Mr. Srinivasa Rao and myself in an account of the Indian Limnaeidae we hope to publish shortly. This is *L. andersoniana* Nevill, the other is *L. yunnanensis* of the same author; they were both described from the late Dr. John Anderson's collection made in the west of Yunnan. A form of *L. yunnanensis*, for which a new name has to be found, was described later from Erh-hai by Neumayr under the inappropriate and incorrect name *L. auricularia* var. *yunnanensis*. He was evidently unaware of its relationship to *L. yunnanensis* Nevill, if he knew of the description of that form. I propose the new name *L. yunnanensis* f. *distensa* for this form.

#### *Limnaea andersoniana* Nevill.

1921. *Limnaea andersoniana*, Annandale and Prashad, *Rec. Ind. Mus.*, XXII, p. 574, Plate VIII, Figs. 1-6.

Further investigations extend the range of *L. andersoniana* on the North-West Frontier of India, in the Western Himalayas and in Turkestan. We find, indeed, that nearly all the Indian specimens hitherto referred to *L. truncatula* really belong to this species, though the true *L. truncatula* occurs at high altitudes in Chitral. The two species are related in an interesting manner but may be distinguished by the much shorter spire in all forms of *L. andersoniana*.

Specimens were taken at Yung-Chang (5,500 feet) on a tributary of the Upper Salween. They all belong to the typical phase of the species.

Type-specimen. M  $\frac{12426}{2}$ , Z S I. (*Ind. Mus.*).

*Limnaea yunnanensis* Nevill.

1877. *Limnaea yunnanensis*, Nevill, *Journ. Asiat. Soc. Bengal*, XLVI (2), p. 27.

1881. *Limnaea yunnanensis*, *id. ibid.*, L. (2), p. 142, Plate V, Fig. 8.

The species is closely related to the Indian *L. acuminata*, some of the smaller forms of which resemble it very closely. A constant difference is to be found in the outline of the lip of

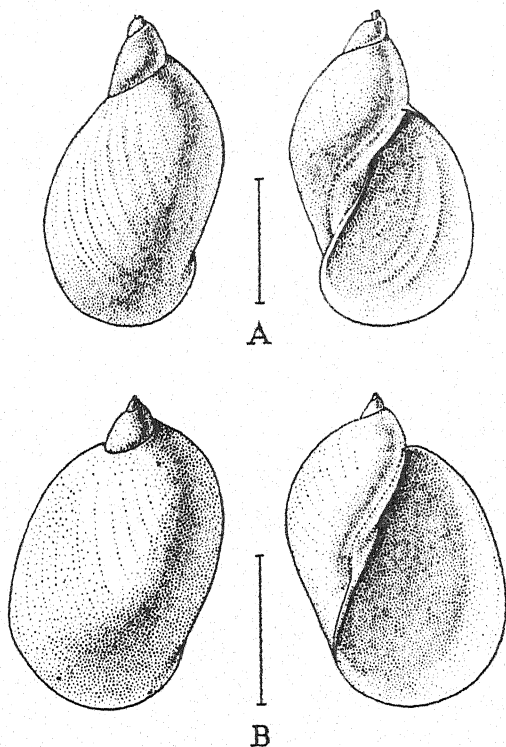


Fig. 1. *Limnaea yunnanensis* Nevill.

(a) Type-specimen of the species.

(b) Type-specimen of the form *distensa* from Erh-hai.

the shell, which in *L. acuminata* is never strongly arched in its upper half as it is in *L. yunnanensis*. My *L. shanensis* is also closely related, but its columellar callus is much better developed. The type-specimen of *L. yunnanensis* is 17.5 mm. high and Nevill evidently made some mistake in his description on this point.

Mr. Srinivasa Rao has extracted the radula and jaw from the type-specimen from Sanda. The latter forms a sector of a circle slightly less than a semi-circle and with a slight triangular projection in the middle of the posterior, otherwise straight margin. the side-pieces are slender, pointed below and of moderate length. The radula has the approximate formula 16.10.1.10.16. The central is relatively large and has a

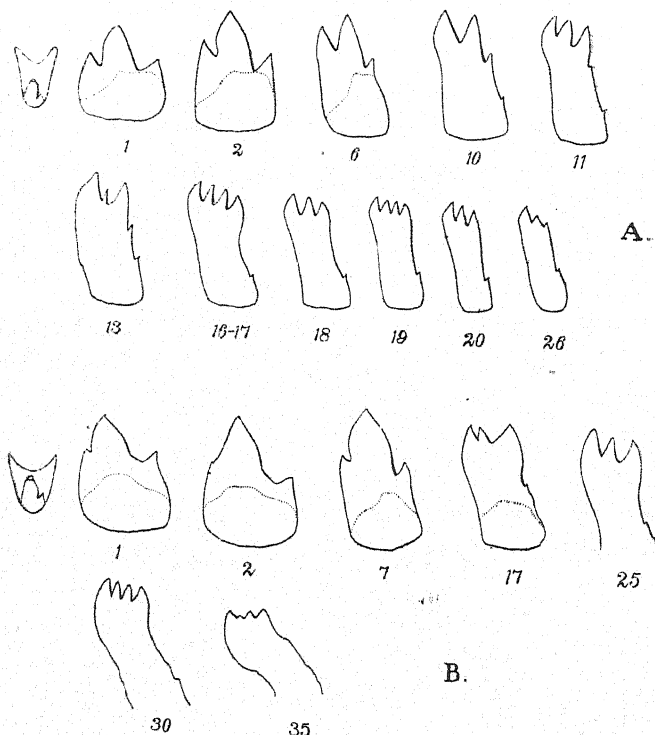


Fig. 2. Radulae of *Limnaea yunnanensis*.

- (a) From type-specimen of the species.  
 (b) From a typical shell of the form *distensa*.

markedly asymmetrical bilobed cusp. All the laterals are tricuspid, with the entocune well developed. The first lateral on either side is relatively short and broad. The cusps of the marginals are horizontal and subequal. The most characteristic feature is the shortness of the first lateral, in which this species differ from both *L. acuminata* and *L. shanensis*.

*Type-specimen.* M  $\frac{1.2 + 3.2}{2}$ , Z.S.I. (Ind. Mus).

Form *distensa*, nom. nov.

1898. *Limnaeus auricularis* var. *Yunnanensis*. Neumayr in Bela Szécheny's *Reise in Ostasien*, II, p. 657, Plate XIV, Fig. 6.

This form is not really related to *L. auricularia*,<sup>1</sup> from which the shell differs in the structure of the columellar fold. In *L. auricularia* the outline of this fold, broad above and very narrow below, is extremely characteristic. In my new form it is uniformly narrow. The radula, moreover, and the genitalia are quite different. In particular the prostate is of

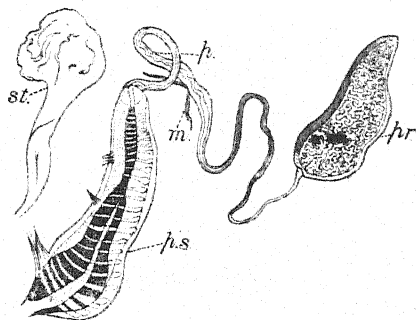


Fig. 3. Genitalia of *Limnaea yunnanensis* and *distensa*.

*m.*, retractor muscle of penis; *p.*, penis; *pr.*, prostate; *p.s.*, penis-sack; *st.*, spermatheca.

a different shape and the spermatheca has a shorter duct. I figure the male part of the genital system and the spermatheca from a sketch by Mr. Srinivasa Rao. The radula in a specimen from the upper Salween system only differs from that of the type specimen of *L. yunnanensis* in that the entocone of the laterals is not so well developed.

Specimens of this form, with others intermediate between it and the *forma typica*, were taken both at Yung-Chang on the upper Salween and in a raised beach near the north-west shore of Erh-hai.

Type-specimen. M  $\frac{12433}{2}$ , Z.S.I. (*Ind. Mus.*)

## Family PLANORBIDAE.

*Gyraulus longios*, sp. nov.

1878. ? *Planorbis compressus*, Nevill in Anderson's *Zool. Anat. Res. Yunnan*, p. 388.

The shell is of a moderate size, very flat, with both surfaces broadly and shallowly concave, with a distinct, deep umbili-

<sup>1</sup> The two forms, indeed, belong to different sections of the genus *L. auricularia* to *Radix* Montfort and *L. yunnanensis* to *Pseudosuccinea* Baker.

cus in the centre of the lower surface, with  $3\frac{1}{2}$  whorls. The periphery of the body-whorl is subcarinate and there is a distinct angle or low carina on the outer part of the whorl above. The suture is broadly impressed, oblique and irregular. The mouth is very broad and shallow, narrowly oval, strongly depressed and oblique, extending far below and beyond the remainder of the shell, with the peristome complete and angulate internally, but without a strongly developed callus. The outer lip is convex and sharp, without any internal thickening. The sculpture consists of moderately well developed, fairly

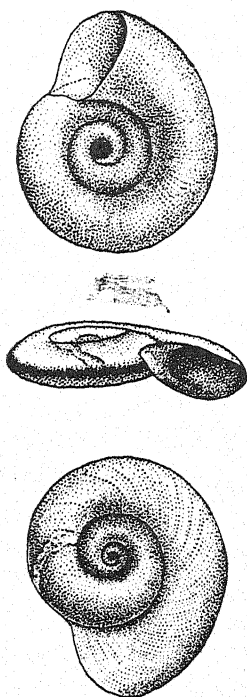


Fig. 4. Type-specimen of *Gyraulus longios*, sp. nov.

regular vertical striae and numerous extremely minute spiral striae. The colour is pale horny, but there is a thin greyish deposit on the shell examined. *Max. diam.*, 4.5 mm.: *min. diam.*, 4.2 mm.: *height*, 1.5 mm.

*Locality.* Cliff above the Awa bend of the Upper Mekong. Altitude, 6,400 feet.

*Type-specimen.* No. M. 12307 Z.S.I. (*Ind. Mus.*).

The specimens from Sanda doubtfully referred by Nevill to *G. compressus* Hutton (= *euphraticus* Mousson) probably

belong to this species; Dr. Germain has referred them to *G. saigonensis*. I have not examined them as they are still with Dr. Germain. I regard my species as distinct from *G. euphraticus*, because the shell is still flatter, distinctly umbilicate, less strongly keeled and with the mouth still broader and more oblique. The minute sculpture also seems to be different and the angulation of the body-whorl above peculiar.

DESCRIPTION OF PLATE 17.

CHINESE VIVIPARIDAE.

The vertical line between the two views of each shell represents its actual height.

*Vivipara angularis* (Müller).

Fig. 1. Typical shell from Canton.

*V. quadrata* (Benson).

Fig. 2. Typical shell from Canton.

*V. quadrata* f. *dispiralis* (Heude).

Fig. 3. Denuded shell from raised beach, Erh-hai, Yunnan.

*V. quadrata* f. *limnophila*, Mabille.

Fig. 4. Partly denuded shell from the same locality.

*V. quadrata* f. *minor* (Nevill).

Fig. 5. Large shell from Western Yunnan.

*V. margaryoides* Annandale.

Fig. 6. Type-specimen from raised beach, Erh-hai, Yunnan.

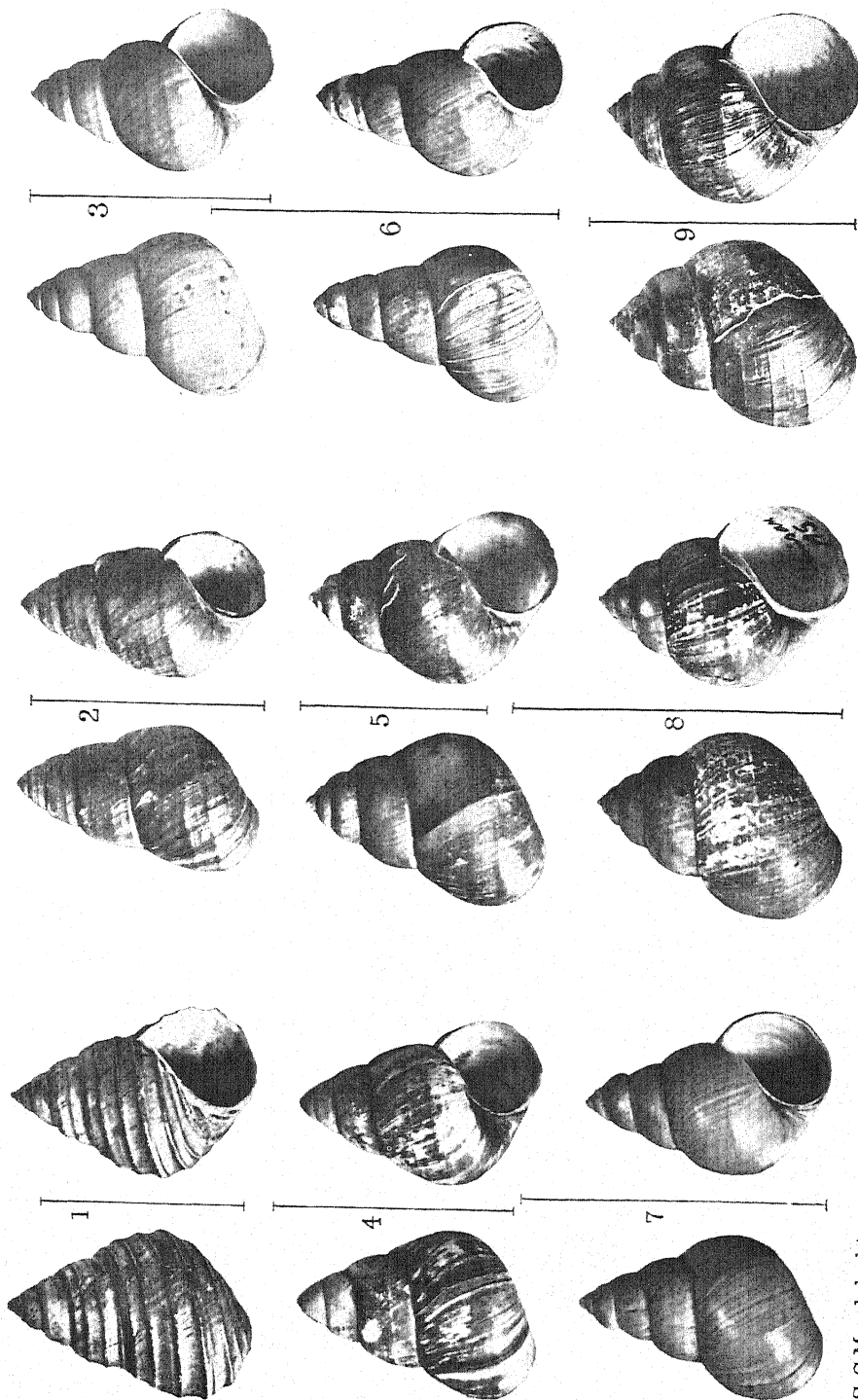
Fig. 7. Another shell from the same series.

*Lecythoconcha lecythoides* (Benson).

Fig. 8. Lectotype from Chusan.

*L. malleata* f. *occidentalis*, nov.

Fig. 9. Type specimen from Ho-Ching, W. Yunnan.



CHINESE VIVIPARIDAE.

S. C. Mondul photo



38. ZOOLOGICAL RESULTS OF THE PERCY SLADEN  
EXPEDITION TO YUNNAN UNDER THE LEADER-  
SHIP OF PROFESSOR J. W. GREGORY, F.R.S.  
(1922).

BIVALVE MOLLUSCS.

By B. PRASHAD, D.Sc., *Zoological Survey of India, Calcutta.*

The collection of Bivalves dealt with in this report is derived from two sources: (1) the shells collected by Dr. J. Coggin Brown, Superintendent, Geological Survey of India, in Yunnan in 1909-1910, and (2) the specimens brought back by the Percy Sladen Expedition to Yunnan in 1922. I have also had the advantage of consulting the collections made by Dr. Anderson in Yunnan and described by Nevill in 1877 and 1879.

In these collections the bivalves are represented by the two families, Unionidae and Cyrenidae. Of the former they unfortunately contain only a single representative, while the latter, the Cyrenidae, is represented by the genera *Corbicula* and *Sphaerium*. Of the genus *Corbicula* there are six species in the two collections, and this appears to be the common freshwater bivalve genus in Yunnan. This preponderance of the genus *Corbicula* in Yunnan is what might be expected in view of the genus being very well represented in India and Burma on the one hand and throughout China, Cambodia and Indo-China on the other. The genus is further very well adapted to the changes of seasons and the very different types of habitats in ponds, lakes and streams. The relationships of the various species are discussed in the notes on the various species, but it may be noted here, that this genus, owing to the very wide distribution of the various species, is not likely to prove of any great value for zoogeographical conclusions. The record of the genus *Sphaerium* from Yunnan is noteworthy.

In conclusion I have to record my deep sense of gratitude to Dr. N. Annandale for valuable suggestions and help in regard to the localities of the various specimens.

UNIONIDAE

No Unionids had been recorded from Yunnan till 1878, when Heude<sup>1</sup> in his interesting work on the fluviatile Molluscs of Nankin, China, included the description of a new Unionid from

<sup>1</sup> Heude, *Conch. Fluv. de la Prov. Nanking*, IV, Plate XXXI, Fig. 64 (1878).

Yunnan-fu. Neumayr,<sup>1</sup> in his account of the scientific results of Count Bela Szechenyi's expedition, described two new species, *Unio superstes* and *U. heres*, from the Lake Tali and *Unio pantoensis* from Panto, Yunnan. Another new species was described later by Fulton<sup>2</sup> under the name *Cuneopsis tauriformis*. The various forms were included by Simpson<sup>3</sup> in his Descriptive Catalogue, and have recently been revised in a special contribution by Haas.<sup>4</sup> I have not sufficient material to go into the question in any detail, and only include a short note on the single valve brought back by the Percy Sladen Expedition.

#### Genus *Rhombuniopsis* Haas.

1920. *Rhombuniopsis*, Haas, *op. cit.*, p. 149.

Haas has recently created this genus for the two Yunnanese Unionids, *tauriformis* and *superstes*. The genus is closely allied to the European *Rhombunio*, but stands in an isolated position when compared with the other genera of Asiatic Unionidae.

#### *Rhombuniopsis superstes* (Neumayr.)

(Plate 16, Figs. 8, 8a.)

1898. *Unio superstes* and *U. heres*, Neumayr, *Wiss. Ergeb. Reise Bela Szechenyi Ostasien*, II, pp. 643, 644, Plate I, Figs. 3, 6.

1914. *Unio superstes* and *U. heres*, Simpson, *Descr. Cat. Naiades*, pp. 722, 723.

1920. *Rhombuniopsis superstes*, Haas, *Senckenbergiana*, II, p. 147.

I agree with Haas in considering the two species of Neumayr as being the same, and have, therefore, adopted his name.

The only (single right) valve collected by the Percy Sladen Expedition from the north-western shores of the Lake Tali, is intermediate in shape between the two "species" figured by Neumayr.

#### Genus *Corbicula* Meg.

Specimens of five species of this genus were collected by Dr. Gregory. None of these are new, but the interest of the collection lies in the fact that most of these had not been collected since they were first described. I have also added a few notes on *C. yunnanensis* Nevill—the only other Yunnanese species, which is not represented in the present collection.

<sup>1</sup> Neumayr, *Wiss. Ergeb. Reise Bela Szechenyi Ostasien*, II, pp. 643, 644 (1898). See also Haas, *Abhand. Senck. Nat. Gesell.*, XXXVIII, pp. 185, 186, 190 (1924); according to him *U. pantoensis* Neumayr is a *Nodularia*.

<sup>2</sup> Fulton, *Ann. Mag. Nat. Hist.*, (7) XVII, p. 246, Plate IX, Fig. 9 (1906). In Simpson's Catalogue this species is wrongly attributed to Preston.

<sup>3</sup> Simpson, *A Descriptive Catalogue of the Naiades*, Detroit, Michigan (1914).

<sup>4</sup> Haas, *Senckenbergiana*, II, pp. 146-151 (1920).

*Corbicula lamarckiana* Prime.

(Plate 16, Fig. 9.)

1864. *Corbicula Lamarckiana*, Prime, *Ann. Lyc. Nat. Hist. New York*, VIII, p. 13, Fig. 16.1877. *Corbicula lamarckiana*, Nevill, *Journ. As. Soc. Bengal*, XLVI, p. 40.1878. *Corbicula lamarckiana*, Nevill, *Anat. Zool. Res. Yunnan*, p. 902.

This species was originally described by Prime from the Laos Mountains, Cambodia, and Nevill later referred specimens from Hota and Momein, Yunnan, collected by Anderson, to it. Some of the specimens were later sent to Mr. H. B. Preston, who named these indiscriminately as *C. striatella* Deshayes and *C. occidens* Benson. In Gregory's collection there are a large number of dead shells collected near Pangaloi, east of Hsaio-sin-kai in the dried up bed of a tributary to the Taping River. Another shell, which I also refer to this species, was collected at an altitude of about 6,750 feet in the canyon of the Mekong above Lo-atar (Tseku). The large number of shells of various sizes agree in all respects with the shells collected by Anderson and referred by Nevill to Prime's *C. lamarckiana*, with the figure and description of which they also agree in all respects.

I have no doubt that the species *C. debrixiana*, *C. rathouisana*, *C. jenouiliana* and *C. presse-plicata*, which Heude<sup>1</sup> described from parts of China, including Yunnan, are all referable to this species.

*Corbicula yunnanensis* Nevill.

(Plate 16, Fig. 10).

1877. *Corbicula yunnanensis*, Nevill, *op. cit.*, p. 40.1878. *Corbicula yunnanensis*, Nevill, *op. cit.*, p. 902, Fig. 32.

Nevill's description of this species is very complete, but the figure, in his second paper, is rather poor. His comparison of the species with the Cambodian species *C. linneana* Prime and the Chinese *C. mulleriana*<sup>2</sup> Prime is also not justifiable. I have examined the types—the only specimens available—and am of opinion that the shape, the hinge and the texture of the shell are more like those of *C. largillierti* (Phil.). Unfortunately the paucity of material before me does not allow of a more detailed comparison.

*Type-specimen.* M <sup>1167</sup>/<sub>1</sub>, *Ind. Mus.*

Heude's *C. diminuta* (*op. cit.*, Fig. 11) seems to be closely allied, if not actually identical with Nevill's species.

<sup>1</sup> Heude, *Conch. Fluv. de la Prov. Nanking*, X (1885).

<sup>2</sup> Prime, *Ann. Lyc. Nat. Hist. New York*, VIII, pp. 14, 3, Figs. 17, 3 (1864).

*Corbicula andersoniana* Nevill.

(Plate 16, Fig. 11).

1877. *Corbicula andersoniana*, Nevill, *op. cit.*, p. 41.1878. *Corbicula andersoniana*, Nevill, *op. cit.*, p. 903.

This interesting species was described by Nevill from specimens collected by Anderson near Moumein (Tengyueh), Yunnan, and is represented in the present collection by a good series from the same locality.

The shells are of medium size, inaequilateral, somewhat tumid, ovate to subtrigonal in outline, some deeper than others; with a very regular sculpture consisting of fine, concentric striae. The hinge is arched, with the lateral teeth of the same size and minutely serrated; the nymphs are somewhat curved and nearly smooth. The periostracum is lemon-yellow, and the nacre is olivaceous to purple on a shining white background.

Measurements :—(in millimetres).

	Type	2	3	4	5	6
Length	.. 19	18	15.6	18	17	13.7
Height	.. 16.7	13.6	12	13.6	13.4	10.4
Diameter	.. 10.5	10	9.2	10.4	10.1	7.6

The type is No. 1112, *Ind. Mus.*

Nevill compared the species with *C. tumida* Deshayes from Borneo, and with *C. inaequilateralis* Prime, a species with the doubtful locality "Africa"; but both these species seem to have little relationships with the Yunnan form. *C. andersoniana* is, on the other hand, closely allied to *C. ovata* Clessin<sup>1</sup> from China and *C. striatella* Deshayes from India.

In the absence of actual specimens it is rather hard to decide about the various species described by Heude from various parts of China, but from his descriptions and figures I am inclined to consider his *C. papyracea* and *C. cantatoris*, as being nearly allied to, if not identical with Nevill's *C. andersoniana*.

*Corbicula ferruginea* Heude.

(Plate 16, Fig. 12)

1885. *Corbicula ferruginea*, Heude, *op. cit.*, Plate VII, Fig. 38.

*C. ferruginea*, belongs to the same group of species as *C. andersoniana*, but the shell is much shorter, sub-cylindrical in shape; thinner, but with more pronounced sculpture, and has a comparatively stronger hinge.

The species was originally described from the hill-streams

<sup>1</sup> Clessin, *Martini and Chemnitz Conch. Cab. Cycladeen*, p. 167, Plate XXIX, Figs. 15, 16.

in the district of Tsing-Yang, while the specimens now assigned to it were collected by the Percy Sladen Expedition in Chitien Valley in the Bheti stream, a tributary of the Yangtse-Kiang River.

Measurements :—(in millimetres).

		1	2	3	4
Length	..	15.8	10.8	10	8.9
Height	..	13.6	10.3	8.2	7.7
Diameter	..	9.2	5.7	5.1	4.3

### *Corbicula praeterita* Heude.

(Plate 16, Figs. 13, a-d).

1885. *Corbicula praeterita*, Heude, *op. cit.*, Plate VII, Fig. 40.

This interesting lacustrine species was described by Heude from the Lake Po Yang, and I assign a large series of specimens collected from the banks of the Lake Tali (Erh hai) by Dr. J. Coggin Brown of the Geological Survey of India, in 1909-1910, and by the Percy Sladen Expedition from the northern banks of the same lake in 1922.

The shells of this species are of a medium size, thick-shelled; with prominent, swollen and somewhat posteriorly recurved umbones. The sculpture on the greater part of the valves is usually eroded, but in shells where it is preserved, it consists of regular, concentric, strong ridges. The hinge is very strong and broad, with the muscle-scars greatly abutting on the lateral teeth. The lateral teeth together with the median teeth form a deep arch which, however, is greatly indented on the two sides of the median teeth, marking them from the laterals. The nymphal area is large and smooth. Most of the shells before me are subfossil, and it is not possible, therefore, to be certain about the colour of the fresh shells, but the more recent ones are of a dark-brownish to black colour, and the nacre shows traces of an olivaceous tint.

The shells from Dr. Coggin Brown's collection show another peculiarity regarding the formation of the very thick lower margin of the valves, as in specimen 4 in the table of measurements. This margin, which varies in thickness from one to four layers, shows distinctly the various layers at different levels in the short area along the inner side of the ventral border. Apparently the shell-margin instead of growing normally in the same axis with the rest of the shell, began to grow at a much slower rate on the inner border of the margin, thereby resulting in the thickening of the margin, instead of an increase in the size of the shell. The shells further show very definite yearly growth-rings, which seem to correspond to active seasons of growth followed by sudden and long periods of suspended activity. This seems to be connected with the peculiar

biological conditions under which these bivalves live along the margins of the Lake. So far as I am aware these conditions have not been properly studied and my conclusions are only derived from the study of the shells before me.

Measurements (in millimetres) :—

		1	2	3	4	5	6
Length	..	27·5	25·4	20	21	20·6	18·8
Height	..	24	25	20·5	20	20·4	16·7
Diameter	..	16·8	17·6	14	14·9	15·2	11·6

### *Corbicula* sp.

A single valve from the Yung-Chang, a tributary to the Salween River, agrees with *C. conica* Heude (*loc. cit.*, Fig. 16), but with only a single valve it is impossible to be certain as to its identity.

### Genus *Sphaerium* Scopoli

I have not succeeded in tracing any record of the occurrence of this genus in Yunnan, and it is, therefore, of interest to note that a single left valve of a species of this genus was collected by the Percy Sladen Expedition near Shang-Kuan on the north-western shores of the Lake Tali. I do not propose describing the species from the single valve, but it may be noted that the species appears to be allied to the Indian species of the genus.

39. ZOOLOGICAL RESULTS OF THE PERCY SLADEN TRUST EXPEDITION TO YUNNAN, UNDER THE LEADERSHIP OF PROFESSOR J. W. GREGORY, F.R.S. (1922).

AMPHIPOD CRUSTACEA.

By W. M. TATTERSALL, D.Sc., *Professor of Zoology, University College, Cardiff.*

The collection of Amphipods made by Professor J. W. Gregory during his recent visit to Yunnan, and entrusted to me for examination by Dr. S. W. Kemp, is a small one, consisting of three tubes of material collected in the following localities :—

I tube labelled C. 5.

June 15th, 1922. The Li-Kiang snow peak, on the eastern flank of the mountain, one day's march north of the city of Li-Kiang-fu, Yunnan.

I tube labelled C. 10.

June 30th, 1922. Stream at Yei-chih, altitude 6,400 feet, on the terrace beside the Mekong River. Stream fairly swift, flowing over a large delta fan; it had come from some high mountains and was then spreading out over the slope of the gravels on its way down to the Mekong.

I tube labelled C. 23.

August 25th, 1922. Pool at Lang-sui-chang, half-way between Pupiao and Yung-Chang in Yunnan, altitude 5,500 feet. Yung-Chang is in south-west China, on the road from Bhamo on the Upper Irrawadi to Tali-fu on lake Tali in Yunnan.

The collection contained two species of the genus *Gammarus*, one, *G. annandalei*, recently described by me from the eastern part of China and Japan, and the other, apparently undescribed which I have pleasure in naming after its discoverer.

Family GAMMARIDAE.

Genus *Gammarus* Fabricius.

*Gammarus annandalei* Tattersall.

*G. annandalei*, Tattersall, *Mem. Asiatic Soc. Bengal*, VI, pp. 435-459, Plates XVIII-XXI, 1922.

*Occurrence*.—C. 23, two males, one female and one immature.

*Remarks.*—These specimens are in substantial agreement with those described by me from Japan and the eastern part of China in the essential form and structure of the appendages and especially in having accessory vesicles on the branchial lamellae. They vary from the typical form in the spinulation of the segments of the pleon. There are no spinules on the first three somites, two spinules on the fourth, two on the fifth and, in the female specimen, one spinule on the sixth somite; in the other specimens this somite is without spinules. Thus these specimens have fewer spinules on the pleon than those from Japan. The telson has a single spine at the apex of each lobe and one on each lateral margin. There are practically no setae or only a very few short ones on the third uropod. These small variations come well within the range of that known for other species of the genus.

It is a matter of some interest to find this species at the other side of China from the localities at which it was first discovered. China has not been extensively explored and future work will probably show that this Gammarid is widely distributed in the rivers and streams of the Chinese Empire.

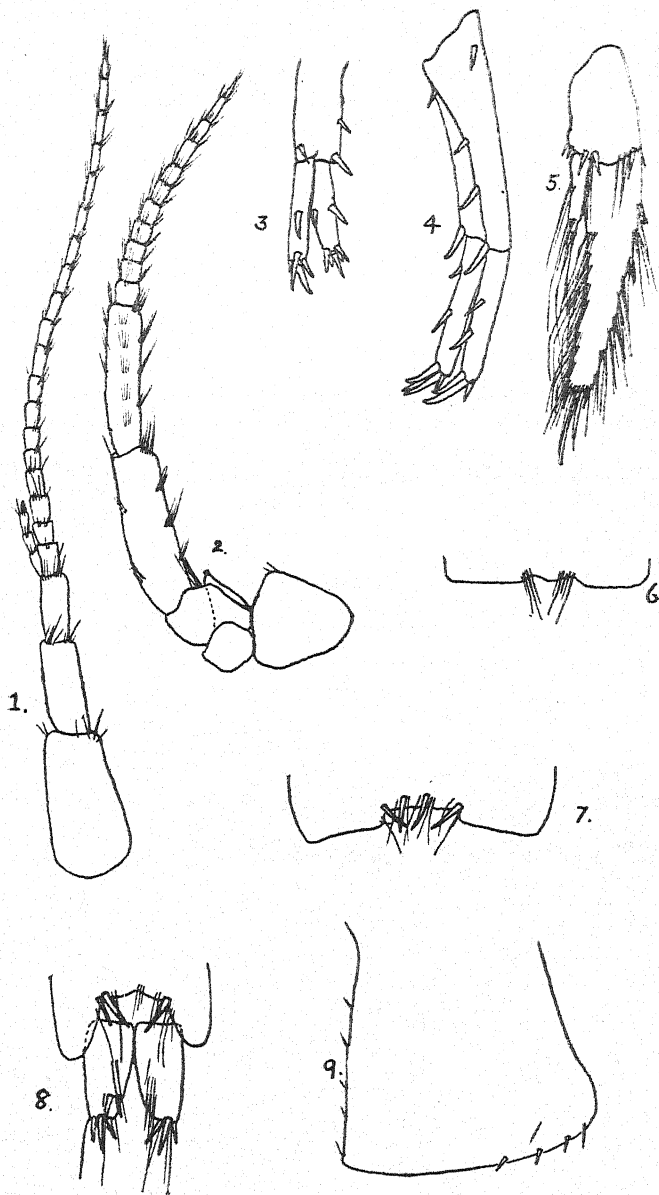
***Gammarus gregoryi*, sp. nov.**

*Head.*—Shorter than the combined length of the first two free thoracic somites measured in the mid-dorsal line; lateral lobes obliquely truncate with both upper and lower angles rounded; sinus somewhat deep; lower lateral angle acute.

*Eyes.*—Small, reniform in shape, situated equidistantly between the dorsal margin of the head and the lower margin of the lateral lobe of the head and not more than one-third of the length between these two points; no outer row of colourless ommatidia.

*Side plates.*—1-4, deeper than the corresponding somites; first three rhomboidal in shape with the lower (distal) angles rounded; the first plate with two small notches for the articulation of minute spinules at each of the anterior and posterior angles, the second plate with one anterior and three posterior notches, the third plate with two anterior and one posterior notch of the same kind; fourth side plate as broad as deep, posterior expansion short with the hind margin straight and bearing about six minute spinules in notches; two similar spinules are present on the lower anterior angle of the fourth side plate.

*Pleon.*—With the posterior-lateral corner of the third somite hardly produced at all and bluntly pointed with five or six spinules in notches on the hind margin and four on the anterior half of the lower margin; postero-dorsal portion of the fourth somite *without* spines but with a group of four rather long delicate setae on each side of the mid-dorsal line;



*Gammarus gregoryi*, sp. nov. (Male).

1. First antenna. 2. Second antenna. 3. Second uropod. 4. First uropod. 5. Third uropod. 6. Posterior margin of the fourth pleon somite. 7. Posterior margin of the fifth pleon somite. 8. Posterior margin of the sixth pleon somite, and telson. 9. Postero-lateral angle of the third pleon somite. All  $\times 25$ .

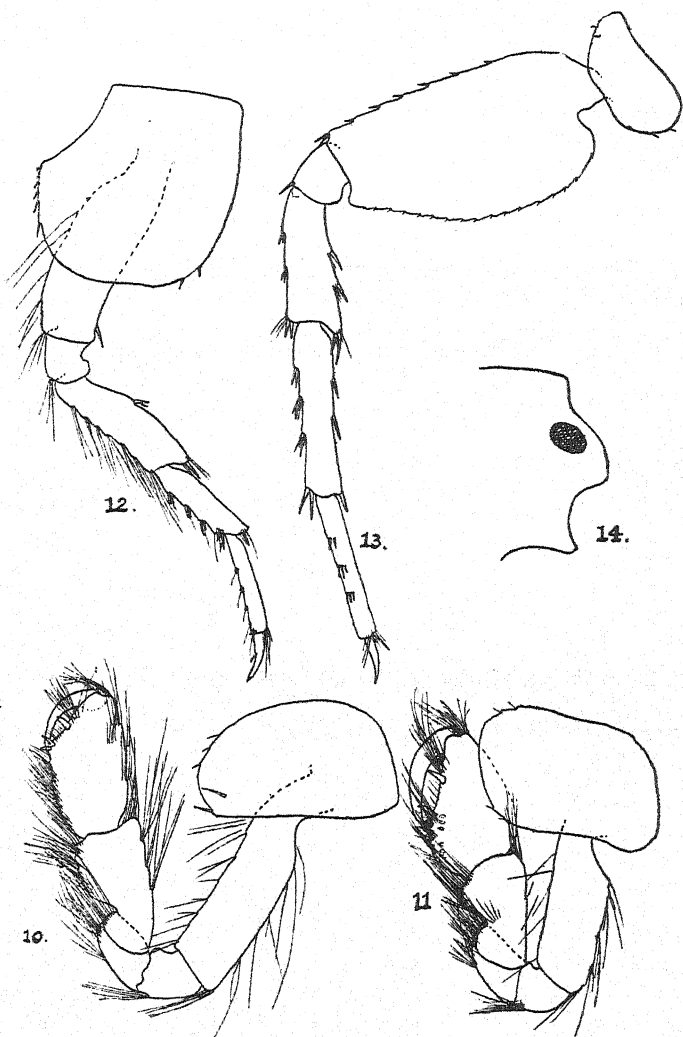
fifth somite with four spines and a similar number of groups of long setae equidistantly placed on the centre of the posterior dorsal margin, two on each side of the mid-dorsal line; sixth somite with one group of two spines and two groups of fine long setae on each side of the mid-dorsal point of the posterior margin. The arrangement of the spines and setae on the fourth to the sixth somites of the pleon outlined above seems to be the typical one but there is some variation and even asymmetry (see fig. 8) in the number and position. I have, however, failed to detect a single specimen with spines on the fourth somite.

*Antenna 1.*—Not half as long as the body and not differing appreciably in the sexes either as to length or adornment of setae; longer than antenna 2; peduncle extending only slightly beyond the distal end of the fourth joint of the peduncle of antenna 2, first joint about equal to, if anything slightly less than, the combined lengths of the second and third joints; primary flagellum consisting of about 19–21 joints; accessory flagellum of three or four joints (in the latter case the fourth joint is very small) and equal in length to the first three or four joints of the primary flagellum; whole appendage but sparingly furnished with a few short setae and without clusters of long setae on the lower margin of the joints of the peduncle.

*Antenna 2.*—Shorter than antenna 1, peduncle extending to about the level of the distal end of the third or fourth joint of the primary flagellum of antenna 2; fourth and fifth joints of the peduncle subequal in length; flagellum equal in length to the combined fourth and fifth joints of the peduncle and composed of 9–11 joints; fourth and fifth joints of the peduncle adorned with four or five groups of moderately long setae on the lower margins and a few calceoli in the male.

*Gnathopod 1.*—(Second thoracic limb) in the male with the hand robust, wider proximally than distally, about one and a half times as long as wide, palm very oblique, with a single strong spine about the centre of the palmar margin and a group of nine spines, one of which is much larger than the rest, upon which the tip of the dactylus impinges; on the inside face of the palm is a row of six quite short stout spines.

*Gnathopod 2.*—(Third thoracic limb) in the male with the hand less robust than in gnathopod 2, about twice as long as broad, palm much less oblique than in gnathopod 1 so that the hand is of more equal width throughout and more quadrangular in shape, a single strong spine in the centre of the palmar margin and two spines at the point of impact of the dactylus. In both gnathopods the merus, carpus and propodus are liberally supplied with groups of long setae. In the female the gnathopods are smaller and less robust than in the male but have a very similar shape and armature except that the spine on the middle of the palmar margin is absent in both cases.



*Gammarus gregoryi*, sp. nov.

10. Third thoracic limb of the male. 11. Second thoracic limb of the male. 12. Fifth thoracic limb. 13. Eighth thoracic limb. 14. Outline of the front of the head and eyes. All  $\times 18$ .

*Peraeopods 1 and 2.*—(Fourth and fifth thoracic limbs) are characterised by a development of very long setae on the lower margin of the merus, particularly in peraeopod 1.

*Peraeopods 3-5*—(Sixth to eighth thoracic limbs) with the second joint expanded and the lower corner of the hind margin free and somewhat produced in all three; in peraeopods 4 and 5 this joint is longer than in peraeopod 3 and slightly narrowed distally; hind margin of this joint finely serrate. Six pairs of simple pedunculate branchial lamellae attached to the third to the eighth thoracic limbs and in the female four pairs of incubatory lamellae attached to the third to the sixth thoracic limbs.

*Uropod 1.*—Longer than uropod 2, in natural position extending slightly beyond the basal joint of the third uropod: the details of the armature can be seen from fig. 4.

*Uropod 2.*—In position extends to the distal end of the basal joint of uropod 3.

*Uropod 3.*—With the inner branch one-third of the length of the first joint of the outer branch and in position extending slightly beyond the apices of the lobes of the telson; terminal joint of the outer branch small but distinct; outer branch in both sexes provided with numerous long setae on the inner and outer margins in addition to the usual spines.

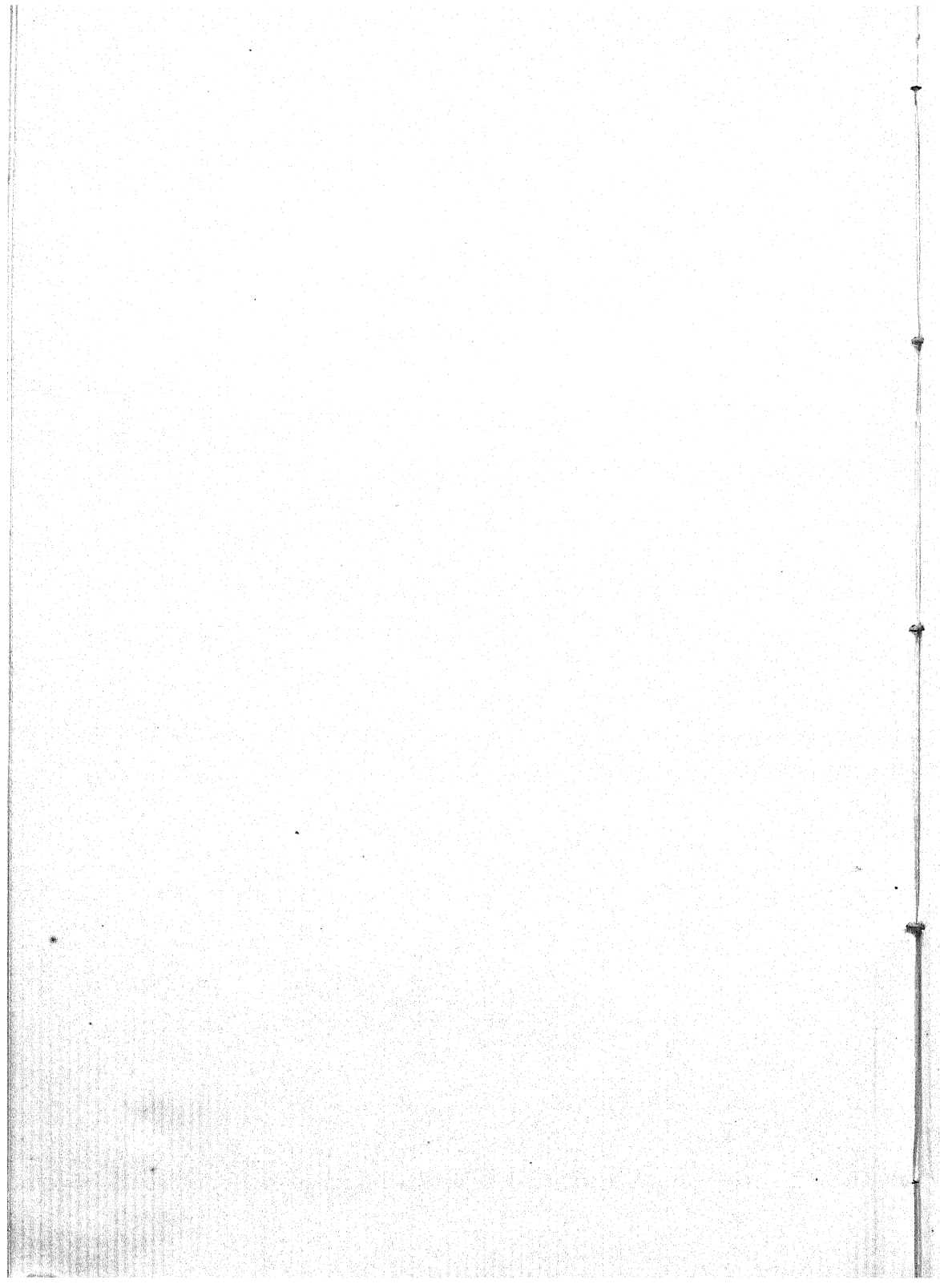
*Telson.*—With the apices of its lobes extending slightly beyond the distal end of the basal joint of the third uropod, cleft to the base, apex of each lobe armed with a group of three spines; a group of two spines on the dorsal surface of each lobe near the apex; in addition there are one or two groups of long hairs on the dorsal surface of each lobe. As will be seen from fig. 8, there is some asymmetry in the dorsal armature of the lobes of the telson in some specimens.

*Length.*—10 mm.

*Remarks.*—With the aid of the key to the species of the genus *Gammarus* provided by Stebbing (Das Tierreich, 1906), this new species becomes excluded under 14 and finds its nearest ally in *G. crassus* G. O. Sars, from the Caspian Sea. *G. crassus* is, however, as its name implies, a more robust clumsily built species and *G. gregoryi* differs from it in its more slender build, longer and more slender appendages, in the much less produced posterior corner to the basal joint of the last thoracic limb, in the form of the gnathopods in both sexes and in the greater length of the third uropod. *G. gregoryi* shows some affinities with *G. pungens* M.-Edw., but differs in the form of the postero-lateral corner of the third somite of the pleon, which in *G. pungens* is more or less acutely produced, in the armature of the fourth to the sixth somites of the pleon, somewhat shorter antennae and in the different shape of the basal joint of the fifth peraeopod, which in *G. pungens* is narrower and without a produced posterior corner.

From the other species present in this collection and the only other of the genus known from China, *G. gregoryi* differs in the following points:—(1) it has no accessory vesicles on the branchial lamellae; (2) the first gnathopods are more robust, especially in the male, with a much more oblique palmar margin to the hand having a prominent spine at the centre and a group of spines where the apex of the nail impinges. In *G. annandalei* the hand of the first gnathopods is more quadrangular in shape, the palmar margin less oblique and without a large spine at its centre but armed with a row of peculiar blunt striated spines; (3) in the form of the second gnathopods in both sexes; (4) in the armature of the somites of the pleon, especially in being without spinules on the fourth somite; (5) in the different shape of the postero-lateral angle of the third somite of the pleon—in *G. annandalei* this angle is acutely produced. (6) In the general proportions of the uropods and telson. In *G. annandalei* the first and second uropods in their natural position extend at least half way and the first sometimes much further, along the first joint of the outer branch of the third uropod. (7) In the presence of long setae on the third uropods and in the minute size of the second joint of the outer branch of these appendages. In *G. annandalei* the third uropods are practically devoid of long setae except in the adult males from one or two localities, and the second joint of the outer branch is about one-sixth to one-fifth of the length of the first.

Occurrence	{	C. 10, about thirty specimens ( <i>types</i> ).
		C. 5, one damaged specimen.



40. ZOOLOGICAL RESULTS OF THE PERCY SLADEN  
TRUST EXPEDITION TO YUNNAN UNDER THE  
LEADERSHIP OF PROFESSOR J. W. GREGORY,  
F.R.S. (1922).

DECAPOD CRUSTACEA.

By STANLEY KEMP, Sc.D., *Zoological Survey of India.*

(Plate 18.)

Four species of Decapod Crustacea are represented in the collection made by Professor Gregory's expedition. The only Macruran is a species of *Caridina* from Tali-fu, which, apart from the fact that it had not hitherto been described, is interesting in showing peculiar sexual modifications in the third and fourth legs of the male. Similar modifications are known to occur in two of the more primitive genera of the family Atyidae, but had not previously been discovered in *Caridina*. Of the three river-crabs one species, belonging to the genus *Potamon* and subgenus *Potamiscus*, is regarded as new. One species, *Parathelphusa* (*Phricotelphusa*) *elegans*, was found on the Burmese side of the frontier.

Tribe CARIDEA.

Family ATYIDAE.

*Caridina gregoriana*, sp. nov.

The rostrum (text-fig. 1) usually reaches to the middle of the terminal segment of the antennular peduncle; occasionally it is longer, sometimes considerably exceeding the length of the peduncle, and not infrequently it is shorter, extending only to the middle or end of the second segment. In lateral view it is slender and is straight or slightly depressed with the dorsal border sometimes a little concave. Dorsally it bears from 8 to 17 teeth,<sup>1</sup> nearly always 9 to 14. The majority of these teeth form a close-set series over the base of the rostrum and from 4 to 7 of them (most commonly 5 or 6) are placed on the carapace behind the posterior limit of the orbit. The teeth at the proximal end of the series are generally a little more widely spaced than those in front of them and all are

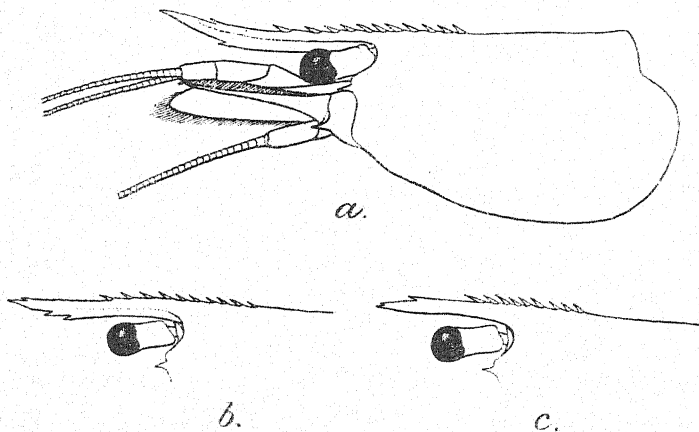
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<sup>1</sup> Of fifty specimens, one has 8 dorsal teeth, six have 9, eight have 10, eleven have 11, fourteen have 12, three have 13, five have 14, one has 15 and one has 17.

articulated. In advance of the series, on the anterior half of the rostrum one or two isolated teeth, which are not articulated, are usually to be found; the foremost tooth is never placed so close to the apex as to give it a bifid appearance. The lower portion of the rostral blade is well developed and bears from 0 to 3 teeth,<sup>1</sup> usually 1, in the anterior half.

The preorbital length of the antennular peduncle is slightly more than 0.8 times the post-orbital length of the carapace (from 0.81 to 0.85 according to my measurements). The orbit is rather deeply excavated, but with its lower angle little prominent. The antennal spine is strong and the antero-lateral angles rather broadly rounded.

The antennular somite does not appear to be dorsally



TEXT-FIG. 1.—*Caridina gregoriana*, sp. nov.

a. Carapace, rostrum, etc., of an ovigerous female.

b., c. Rostra of two other specimens.

carinate. The antennular peduncle does not quite reach the end of the antennal scale. Its lateral process does not reach the end of the basal segment and the distal spine of this segment falls short of the middle of the second segment. The second segment itself is slender, in dorsal view about twice as long as its greatest breadth. The antennal scale is nearly three times as long as wide, with straight or feebly concave outer border.

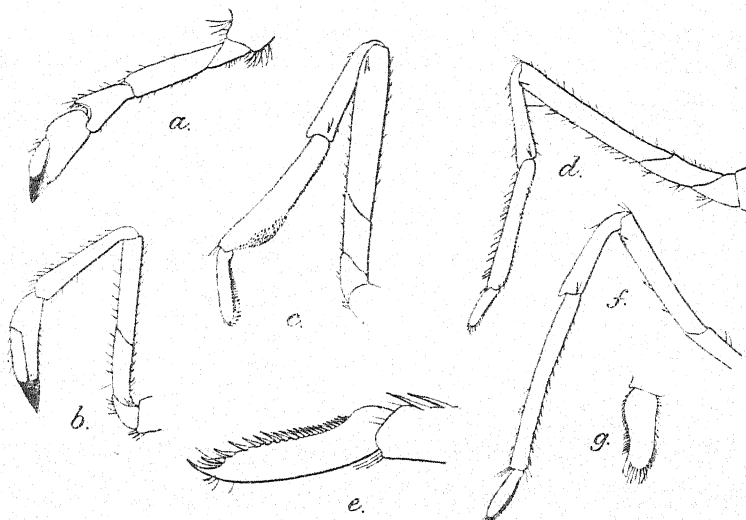
The epipod of the third maxilliped is short and pointed.

The first legs (text-fig. 2a) are very short and reach only to the end of the eye. The carpus is rather deeply excavated

<sup>1</sup> Of fifty specimens, nine have no ventral teeth, twenty-six have 1 tooth, eleven have 2 teeth, and four have 3 teeth.

anteriorly and its length is from 1.65 to 1.75 times its distal breadth. The palm does not extend far backwards behind the carpo-propodal articulation; the fingers are a little longer than the palm and a little shorter than the carpus.

The second legs (text-fig. 2*b*) reach about to the middle of the second antennular segment in females; in males they are slightly shorter. The carpus is from 5 to 5.5 times as long as its distal breadth. The chela is one fifth shorter than the carpus and is from 3.25 to 3.5 times as long as wide in females, about 3 times in males; in both sexes the fingers are 1.5 times as long as the palm.



TEXT-FIG. 2.—*Caridina gregoriana*, sp. nov.

- |                         |                                      |
|-------------------------|--------------------------------------|
| a. First leg.           | e. Dactylus of third leg of female,  |
| b. Second leg.          | further enlarged.                    |
| c. Third leg of male.   | f. Fifth leg.                        |
| d. Third leg of female. | g. Endopod of first pleopod of male. |

In females the third legs (text-fig. 2*d*) reach about to the tip of the antennal scale. At the distal end of the merus on the outer side there is a sharp forwardly directed spine and there is a similar spine in the same position on the carpus. The propodus is from 2.3 to 2.6 times the length of the dactylus and from 8 to 9 times as long as wide; it bears a series of numerous spinules on its posterior border. The dactylus (text-fig. 2*e*) is rather slender and slightly curved and bears (in all) 19 to 21 spinules. The fourth legs of the female are similar to the third but somewhat shorter.

In males the third and fourth legs (text-fig. 2*c*) are

remarkably modified. They are longer than in females, the third pair reaching beyond the scale by one or two times the length of the dactylus. The merus and carpus resemble those of females and have the same external spines, but the propodus is very conspicuously dilated towards its distal end and the posterior border is still more thickly set with spinules. The propodus is only from 1.8 to 2.1 times the length of the dactylus and is only from 4.6 to 4.7 times as long as its greatest breadth. The spinules of the dactylus vary in number from 20 to 29 and are conspicuously recurved near the apex.

The fifth legs (text-fig. 2f) in both sexes reach a little beyond the end of the first antennular segment. The merus has one or two spines on its posterior border and one situated externally near the distal end; there is one external spine at the distal end of the carpus and sometimes a smaller spine in addition in the anterior part of the posterior border. The propodus is from 2.5 to 3.2 times the length of the dactylus and tends to be proportionately longest in females. The dactylus bears a series of 42 to 56 spinules.

The branchial formula is normal and there are well developed epipods at the base of the first four legs.

The form of the endopod of the first pleopod of the male is shown in text-fig. 2g. The appendix masculina of the second pleopod is very large and nearly as long as the endopod which bears it.

The telson bears from 4 to 9 pairs of dorsal spinules and the apex, which is broadly rounded, is furnished with five pairs of rather stout setae between the spinules at the postero-lateral corners. The spinules on the outer uropod vary in number from 9 to 11.

Full grown females reach a length of about 30 mm. The eggs are very large, from 1.0 to 1.17 mm. in length and from 0.65 to 0.85 mm. in breadth.

The species is described from a large number of specimens collected for Dr. J. W. Gregory by Mr. W. N. Ferguson at Tali-fu in Yunnan at an altitude of about 7,000 feet. A number of the best specimens have been selected as types and are registered in the collections of the Zoological Survey of India under number C 688/1.

Some years ago Mr. J. Coggin Brown of the Geological Survey of India brought back a large number of *Caridina* from Yunnan. He obtained them from a fisherman at Tali-fu who was taking them to market in a basket and it is probable that they came from Lake Tali. The condition of these specimens is exceedingly bad, for they were completely dry when purchased and appear to have been cooked. So far as can be seen they agree closely in general character with *C. gregoriana*, but the upper rostral teeth appear on the whole to be less numerous and no males with modified legs can be recognised.

*Caridina gregoriana* appears to be distinguished from all other species of the genus by the large number of spinules on the dactyli of the third and fourth legs and by the peculiar modifications which these legs undergo in males. In general appearance the species is not unlike *C. davidi* Bouvier<sup>1</sup> from Southern Shensi and the environs of Pekin. Apart, however, from the two characters mentioned above *C. davidi*, which I have myself examined, is at once distinguished by the more depressed rostrum with fewer teeth on the carapace behind the orbit, the much shorter preorbital length of the antennular peduncle and the proportionately longer dactylus of the fifth leg. In Bouvier's key to certain species, published in 1913,<sup>2</sup> it comes nearest to *C. propinqua* de Man, from which it is readily separated by a large number of well-defined characters.

The remarkable modifications of the third and fourth legs of the male do not appear to have been noticed hitherto in any species of *Caridina*; they are, however, precisely similar to those seen in *Paratya* (= *Xiphocaridina*) *compressa* (de Haan) and *P. curvirostris* (Heller).<sup>3</sup> A similar sexual difference also occurs in *Atyaephyra desmaresti* (Millet),<sup>4</sup> but in this genus the segment affected is not the propodus but the merus. *Paratya* and *Atyaephyra* are primitive genera of Atyidae and in this connection it is noteworthy that *Caridina gregoriana*, as shown by the comparatively great preorbital length of the antennular peduncle, is among the more primitive species of the genus to which it belongs.

Both in the modified legs of the male and in the large number of dactylar spinules on the third and fourth legs *Caridina gregoriana* resembles the two species of *Paratya* referred to above. These are striking features, but it would hardly be legitimate to assume without further evidence that the species forms a link between the two genera and was derived directly from *Paratya* by the suppression of the exopods of the legs and of the supra-orbital spines.

### Tribe BRACHYRHYNCHA.

#### Family POTAMONIDAE.

##### *Potamon* (*Potamon*) *atkinsonianum* (Wood-Mason).

1910. *Potamon* (*Potamon*) *atkinsonianum*, Alcock, *Cat. Ind. Decap. Crust.* I, fasc. ii, *Potamonidae*, p. 26, Plate X, fig. 39.

This species, which is common in the Himalayas from Darjiling to Simla and has once been recorded from the Shan

<sup>1</sup> Bouvier, *Bull. sci. France Belgique*, xxxix, p. 83, fig. 7 (1905).

<sup>2</sup> Bouvier, *Trans. Linn. Soc. (2), Zool.*, xv, p. 462 (1913).

<sup>3</sup> See Kemp, *Rec. Ind. Mus.*, xiii, p. 295 and fig. 3, p. 300 (1917).

<sup>4</sup> See Barrois, *Rev. Biol. Nord. France*, v, p. 126, figs. 1-3 (1893).

Hills in Burma, is represented in the collection by a single small female.

Compared with typical specimens from Nepal, this individual differs slightly (i) in the more deeply incised grooves of the upper surface of the carapace, the cervical in particular being very deeply impressed, (ii) in the stronger rugae on the anterior and antero-lateral parts of this surface, and (iii) in the less conspicuous epibranchial tooth. The merus of the third maxilliped is proportionately a little longer than in typical specimens, though still evidently broader than long.

The specimen agrees more nearly with the typical form than with any of the varieties described by Alcock. In the example from the Shan Hills (the only individual known from Burma) the grooves of the carapace are more superficial than in normal specimens, whereas in that in the present collection they are much deeper.

The carapace is 21.8 mm. in greatest breadth, 16.8 mm. in length and 9.3 mm. in depth.

The specimen was obtained at Tengyueh, the Treaty Port on the road from Bhamo to Tali-fu, east of the Chinese frontier; altitude, 5,300 feet, "on the floor of a basin with rice-fields, amid hills of basalts and other volcanic rocks; collected during the rainy season in August."

*Potamon (Potamiscus) yunnanense*, sp. nov.

(Plate XVIII.)

The length of the carapace is about four-fifths its greatest breadth and its depth is nearly half the greatest breadth. In a transverse direction the carapace is slightly convex, longitudinally it is convex anteriorly and almost flat in its posterior two-thirds. The H-groove is sharply defined, but the anterior parts of the cervical groove are for the most part superficial and obscure, though quite distinct where they cut the post-orbital crests. The mesogastric areola is narrow, little more than a quarter the greatest breadth of the carapace; its antero-lateral boundaries are defined posteriorly, but anteriorly are altogether deficient. At the extreme posterior end of the mesogastric areola there is a pair of large oval pits disposed longitudinally. The cardiac region is obscurely defined laterally by a pair of shallow furrows which posteriorly turn outwards and run towards the base of the penultimate pair of legs.

The surface of the carapace is for the most part smooth and, when dry, presents a polished appearance; it is, however, coarsely pitted throughout. The anterior portion of the epibranchial region bears a small number of coarse tubercles, separated by a smooth interval from the upturned antero-

lateral border. The sub-orbital lobes, which are defined inferiorly by a finely crenulate rim, are quite smooth and the side-walls bear numerous fine striae.

The epigastric and post-orbital crests together form a common curve, but the former are greatly advanced in the middle, extending much beyond a line joining the posterior border of the orbit. The strongly oblique edges of the epigastric crests bear transverse tuberculate rugae, but the surface immediately behind the crests is smooth except for the pits, which are here unusually coarse. The post-orbital crests are rather blunt and are separated from the epigastric by a distinct groove. Their edges are broken up into rugae which, towards the lateral margin, merge indistinguishably with the tubercles on the anterior part of the epibranchial region. The crests curve obliquely backwards towards the antero-lateral margin, but do not meet it. They terminate far behind the epibranchial tooth, the latter being midway between them and the outer orbital angle.

The front is moderately declivous; its edge is faintly crenulate, concave in the middle and with the outer angles rather sharply rounded. Behind the strongly raised edge the surface on either side is a little tumid (much less so than in *P. pealium*) and is smooth save for a few low scattered tubercles. The lateral edges are smooth but both upper and lower orbital borders are conspicuously crenulate. The upper orbital border trends obliquely forwards and outwards from the inner corner and is not transverse as in many species of the genus. The gap below the outer orbital angle is small and obscure on the right side, completely absent on the left.

The antero-lateral borders are about as long as the postero-lateral. They are strongly raised, sharply serrulate, moderately curved and posteriorly turn a little inwards on to the dorsum of the carapace. About 22 serrations can be counted behind the epibranchial tooth and 4 or 5 in front of it. The epibranchial tooth is a little larger than any of the serrations but does not differ from them in character.

The abdomen of the male is coarsely pitted. The proximal breadth of the 6th segment is about 2.3 times its median length. The 7th segment is bluntly rounded and about three-quarters as long as broad.

The ischium of the third maxilliped is coarsely pitted, with a shallow longitudinal groove; the merus is considerably broader than long. In both exopodites the flagellum is completely absent.

The chelipeds are a little unequal. All three edges of the merus are sharply serrulate; the upper surface of the carpus is finely rugose and the inner spine is very sharp with two serrations at the base. The palm is slightly swollen and is rugose dorsally; externally it is rather coarsely pitted with three

ill-defined longitudinal rows of tubercles. The movable finger has 3 or 4 dorsal tubercles at the proximal end. Both fingers bear longitudinal rows of pits and have small teeth on their inner edges. The fingers do not gape appreciably when the claw is closed.

The second pair of walking legs is the longest and is rather less than twice the length of the carapace. In all four pairs the upper edge of the merus is rugose and both borders of the propodite spinulose. The dactylus throughout is longer than the propodus and the latter segment in the last pair is 1.8 times as long as broad.

The species is described from a single adult male having the following measurements (in mm.):—

Length	..	..	..	..	22.5
Breadth	..	..	..	..	27.5
Depth	..	..	..	..	13.0
Fronto-orbital breadth	..	..	..	..	19.3
Distance between epibranchial teeth	..	..	..	..	23.3
Breadth of mesogastric areola	..	..	..	..	7.7

The specimen was obtained from the river at Yung-chang, in the Mekong watershed, at an altitude of about 5,500 feet. It was collected on 23rd May, 1912, from a pool in a stream outside the city wall. Yung-chang is a large city, about six days march south of Tali-fu, situated approximately in Lat. 24° 27' N., Long. 100° 10' E. It is preserved in the Indian Museum under the number C 792/1.

The nearest ally of this species appears to be *Potamon* (*Potamiscus*) *tumidulum* Alcock<sup>1</sup> from Sikkim. On comparison this species differs in the following points: (i) the areolation of the carapace is better defined, the cervical groove in particular being well marked throughout its course; (ii) there is a conspicuous curved groove behind each epigastric crest, defining an epigastric areola (these are well shown in Alcock's figure); (iii) the mesogastric areola is proportionately broader; (iv) the upper orbital margins are transverse; (v) the antero-lateral margins are less strongly arched and less crisply serrulate, and (vi) the chelipeds are smoother.

*Potamon* (*Potamiscus*) *alcockianum* Kemp<sup>2</sup> from Northern Siam is in some respects similar, but the carapace is much flatter and shallower and is very strongly rugulose anteriorly. The mesogastric areola also is broader and the front is densely tuberculate.

### *Paratelphusa* (*Phricotelphusa*) *elegans* (de Man).

1910. *Paratelphusa* (*Phricotelphusa*) *elegans*, Alcock, *Cat. Ind. Decap. Crust.* I, fasc. ii, *Potamonidae*, p. 104, Plate XIII, fig. 63.

<sup>1</sup> Alcock, *loc. cit.*, pp. 43, 58, Plate II, fig. 6.

<sup>2</sup> Kemp, *Journ. Nat. Hist. Soc. Siam*, VI, p. 24, Plate III, fig. 7 (1923).

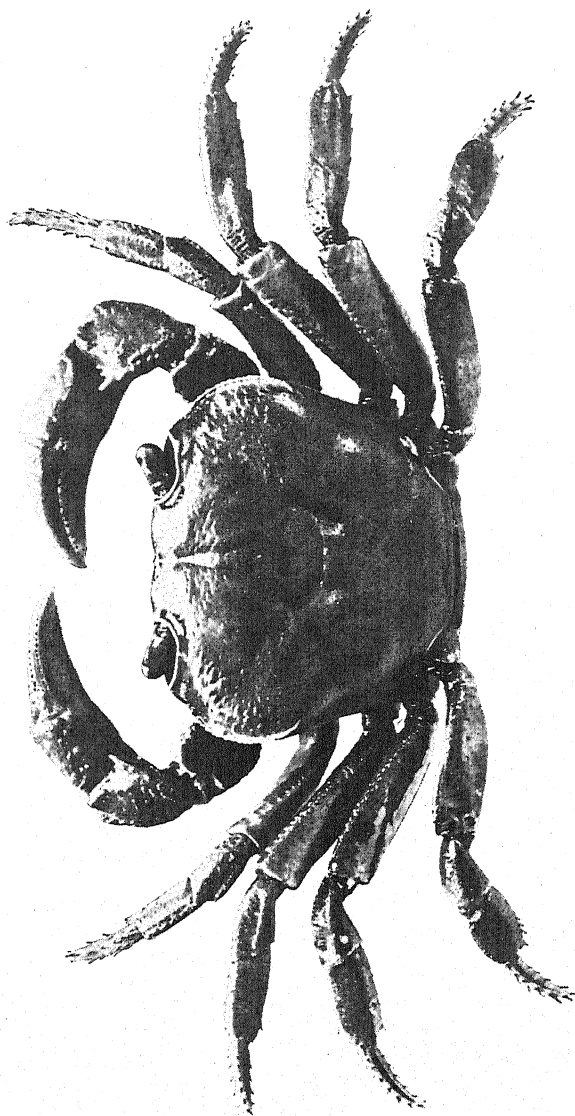
A single small male, with carapace 9.3 mm. in length, 11.8 mm. in breadth and 5.6 mm. in thickness, agrees precisely with specimens from the Kakhyen Hills determined by Alcock. The specimen was obtained at Hkalonghka, 28 miles from Bhamo, at an altitude of 1,000 feet. It was found beside a small stream in thick forest on 6th September, 1922.

The species is known only from the Kakhyen Hills.

EXPLANATION OF PLATE 18.

Potamon (Potamiscus) yunnanense, sp. nov.

Dorsal view of the type specimen, enlarged about twice.



R.C.Mondul, Photo.

POTAMON (POTAMISCUS) YUNNANENSE, sp.nov.



41. ZOOLOGICAL RESULTS OF THE PERCY SLADEN  
TRUST EXPEDITION TO YUNNAN UNDER THE  
LEADERSHIP OF PROFESSOR J. W. GREGORY,  
F.R.S. (1922).

ODONATA.

By F. C. FRASER, MAJOR, I.M.S.

The collection contains nearly 200 specimens of which I have been able to examine about 170.

For want of a better medium, the insects were preserved in some kind of raw native spirit which I fear did not contain any great percentage of alcohol, as most of the specimens have suffered more or less from maceration. By a happy chance however, the rarest and most valuable specimens have suffered the least damage.

As is usually the case where collections of dragonflies are made by those not specializing in them, the majority of the specimens turn out to be *Libellulines*. This is only natural in a dominant sub-family like the *Libellulinae* as the more showy species are apt to force their attentions more pertinently on the collector's attention to the exclusion of less showy and rarer forms.

Very little is known of the dragonflies of Yunnan and existing records are very meagre. Kirby's Catalogue (1890) gives only a single species:—*Mnais andersoni* MacLach., and MacLachlan's list published later (1894) gives only 14 more. It will be useful to recapitulate these and to give a combined list with those collected by Professor Gregory.

The species involved are almost entirely and purely oriental in distribution, only some half dozen being entogenic in the palaearctic region. The paucity of the latter comes as a surprise until one notes that the temperatures recorded were comparatively high (78° to 85° F., at altitudes of 6,000 to 7,000 feet).

In the following list species taken by Professor Gregory are printed in italics:—

- |   |  |
|---|--|
| 1. Agrionoptera sp. MacLach.  | 5. <i>Othetrum triangulare melania</i> Selys.  |
| 2. <i>Libellula basilinea</i> . MacLach.                            | 6. <i>Sympetrum eroticum ardens</i> (MacLach). |
| 3. <i>Orthetrum japonicum internum</i> Uhl.                         | 7. <i>Sympetrum scoticum</i> Don.              |
| 4. <i>Orthetrum cancellatum</i> Linn. race <i>kraepelini</i> . Ris. | 8. <i>Crocothemis servilia</i> Drur.           |
|   | 9. <i>Palpopleura sexmaculata</i> Fabr.        |

- |   |   |
|---|---|
| 10. <i>Diplacodes</i> <i>trivialis</i> (Ramb.). | 20. <i>Mnais andersoni</i> (MacLach.)       |
| 11. <i>Brachydiplax yunnanensis</i> , sp. nov.  | 21. <i>Mnais gregoryi</i> , sp. nov.        |
| 12. <i>Pantala flavescens</i> Fabr              | 22. <i>Mnais maclachlani</i> , sp. nov.     |
| 13. <i>Cordulegaster pekinensis</i> Selys.      | 23. <i>Caliphæa confusa</i> Selys.          |
| 14. <i>Anotogaster annandalei</i> , sp. nov.    | 24. <i>Anisopleura furcata</i> Selys.       |
| 15. <i>Anotogaster gregoryi</i> , sp. nov.      | 25. <i>Rhinocypha iridea</i> Selys.         |
| 16. <i>Heterogomphus</i> sp.                    | 26. <i>Rhinocypha spuria</i> Selys.         |
| 17. <i>Aeschna juncea</i> Linn.                 | 27. <i>Indolestes coerulea</i> , sp. nov.   |
| 18. <i>Echo incarnata</i> . Karsch              | 28. <i>Calicnemis eximia</i> Selys.         |
| 19. <i>Matrona oberthüri</i> (MacLach.)         | 29. <i>Coenagrion dorothea</i> , sp. nov.   |
|   | 30. <i>Ceragrion melanurum</i> Selys        |
|   | 31. <i>Erythromma tinctipennis</i> MacLach. |

## SYSTEMATIC.

***Orthetrum japonicum internum* Uhl.**

*Orthetrum japonicum internum* Uhl. *Proc. Acad. Phila.*, 1858, p. 29.—MacLach., *Ann. Mag. Nat. Hist.* (6) 13, p. 431 (1894).—*O. internum* MacLach., *Ann. Mag. Nat. Hist.* (6) 17, p. 365 (1896).—R. Martin, *Mission Pavie* (p. 7 sep.) (1904).—Morton, *Trans. Ent. Soc., Lond.*, p. 305 (1907).

1 ♂ West of Kholitsan, 1 ♀ near Kakatang, 6 ♂♂ North of Tasa, 1 ♂ near Chitaung, Valley of Yangtse.

These do not differ from type or from specimens from N.-W. India.

***Orthetrum cancellatum* Linn. race *kraepelini* Ris.**

*Orthetrum cancellatum* Linn. race *kraepelini* Ris. *Ann. Soc. ent. Belg.*, 41, p. 45 (1897).—*Id.*, *Cat. Coll. Zool. Selys.* Fasc. XI, p. 231 (1909).

1 ♀ South of Taehimpo, 1 ♀ Chitien Region, Valley of Yangtse, 1 pair near Chitsung, Valley of Yangtse and 1 ♂ near Shangkuan.

All specimens badly macerated but the more extensive pale transverse nervures conform to Ris's race *kraepelini*.

***Orthetrum triangulare melania* (Selys).**

*Orthetrum triangulare melania* (Selys) (*Libella melania*) *Ann. Soc. ent. Belg.*, 27, p. 103 (1883).—*Id.*, (*Libellula melania*) *Compt. Rend. Soc. ent. Belg.* 7, VII, 88 (p. 4 sep.).—Kirby (*Orthetrum melania*) *Cat.*, pp. 39, 182 (1890).—MacLach., *Ann. Mag. Nat. Hist.* (6) 13, p. 432 (1894).—*Id.*, *ibid.* (6) 17, p. 366 (1896).

1 ♂ West of Kholitsan, 1 ♂ West of Lichiang, 1 ♂ near Kakatang, 5 ♂ near Aiwa in Mekong Valley, 2 ♂ South of Yeichih, 3 ♂ South of Puti, 1 ♂ South of Tsehimpo, 1 ♀ North of Chitsung, Valley of Yangtse, 1 ♀ West of Lashihpa.

Do not differ from type. Widely spread throughout China and Japan.

*Sympetrum eroticum ardens* (MacLach.).

*Sympetrum eroticum ardens* (MacLach.) (*Thecadiplax ardens*).  
*Ann. Mag. Nat. Hist.* (6) 13, p. 429 (1894).—*Id.*, *ibid.*  
 (6) 17, p. 364 (1896).—Selys, (*Diplax erotica*). *Ann.*  
*Soc. ent. Belg.*, 27, p. 90 (1883).—Ris, *Cat. Coll. Zool.*  
*Selys*, Fasc. XIII, p. 669 (1911).

A single ♀ from near Chitsung, Yangtse Valley. The apices of the wings are hyaline, the bases of all wings saffronated as far as trigones.

*Crocothemis servilia* (Drur.).

*Crocothemis servilia* (Drur.) (*Libellula servilia*). *Ill. ex. Ins.*, i.  
 tab. 47, fig. 6 pp. 112-113 (1770).—Ramb., *Nevr.*,  
 p. 80 (1842).—Brauer (*Erythemis servilia*). *Novara*,  
 p. 104 (1866).—*Id.* (*Crocothemis servilia*). *Zool. bot.*  
*Wien*, 18, p. 737 (1868). etc.

1 ♂ near Hoching, 1 ♀ near the same place, 1 pair near Shangkuan, 1 ♂ West of Huanglienpu, 2 pairs Salween Valley, 1 ♂ between Lu-chang and Fei-lung, on path above the river Mekong.

These do not differ from type, the maceration has rather hidden their ages.

*Palpopleura sexmaculata* (Fabr.).

*Palpopleura sexmaculata* (Fabr.) *Ins.*, 1, p. 338, No. 31  
 (1787).—*Id.*, *Ent. syst.*, 2, p. 381 (1793).—Burm.,  
*Hdb. Ent.*, 2, p. 860 (1839).—Ramb., *Nevr.*, p. 126  
 (1842).—Brauer, *Zool. bot. Wien*, 18, p. 716 (1868).—  
 Kirby, *Proc. Zool. Soc., Lond.*, 1883, p. 325. —*Id.*,  
*Trans. Zool. Soc., Lond.*, 12, p. 273. —*Id.*, *Cat.* p. 9  
 (1890).—Selys, *Ann. Mus. civ. Genov.* 30, p. 446  
 (1891).—Calv., *Trans. Amer. ent. Soc.*, 25, p. 92  
 (1898).—R. Martin, *Mission Pavie* (p. 5 sep.) (1904).—  
 Ris, *Jenaische Denkr.*, 13, p. 331 (1908).—Fabr.  
 (*Aeschna minuta*) *Mantissa Ins.*, i, p. 339, No. 5  
 (1787).—*Id.*, *Ent. Syst.*, 2, p. 385 (1793).

1 ♂ and 2 ♀ Salween Valley. The females have a small black spot between *Mii* and *Miii* in all wings just within the level of the inner end of the stigma. This spot is absent in the male.

**Diplacodes trivialis (Ramb.).**

*Diplacodes trivialis* (Ramb.) *Nevr.*, p. 115 (1842),—Fabr. (*Libellula braminea*) *Suppl. Ent. Syst.*, p. 284 (1798),—Brauer, (*Diplax trivialis*) *Novara*, p. 104 (1866),—*Id.*, *Zool. bot. Wien*, 17, p. 289 (1867),—Selys, *Ann. Soc. Ent. Belg.*, 27, p. 95 (1883),—Kirby, (*Trithemis trivialis*) *Trans. Zool. Soc., Lond.*, 12, p. 278 (1889),—*Id.*, *Proc. Zool. Soc., Lond.*, p. 203 (1893),—Laid. *ibid.*, p. 66, i, (1902),—Karsch, (*Diplacodes trivialis*) *Ent. Nachr.*, 17, p. 246 (1891),—Ris, *Cat. Coll. Selys*, Fasc. XII, p. 468 (1911), etc.

15 ♀ ♀ and 7 ♂ ♂ from the Salween Valley. All true to type. A very common and widespread species from the Seychelles to the Philippines and throughout the oriental region.

**Brachydiplax yunnanensis, sp. nov.**

3 ♂ ♂ and 5 ♀ ♀ Yeichih, in the Mekong Valley, 4 ♂ ♂ and 1 ♀ near Chitsung, Yangtse Valley, 1 ♀ North of Shih-ku, 5 ♀ ♀ near Ho-ching.

*Male.* Abdomen 24 mm. Hindwing 28 mm.

*Head.* Labium ochreous; labrum white; face brown, unmarked; frons and vesicle metallic green; occiput black. Back of head and eyes dark reddish brown variegated with bright citron yellow and black.

*Prothorax* and *thorax* black, dully metallic. Legs black, hind-legs with a row of robust, rather short widely spaced femoral spines.

*Abdomen* densely pruinose, almost white. Short and stout, tapering gradually to the anal end.

*Wings* hyaline, the bases saffronated diffusely as far out as a little distal to the line of the trigones. Pterostigma bicolorous, the costal half deep blackish brown, the posterior half whitish; trigones traversed once in all wings; nodal index  $\frac{7.11}{7.9} \frac{11.8}{9.7}$ ; discoidal field begins with a row of 3 cells and then continues as rows of 2 cells.

Anal appendages black, rather long and curving sharply downward, slightly dilated at the ends.

*Genitalia* prominent, lamina broad and low, hamules bulky, the base tumid, the hook very short and sharply curved; lobe long and thin.

*Female.* Abdomen 22 mm. Hindwing 28 mm.

*Head.* Eyes pale olivaceous yellow with a reddish cap above; labium with the middle lobe black, the lateral bright citron yellow narrowly bordered with black; labrum and face a deeper yellow; frons metallic blue; occiput pale yellow, the rest as for male.

*Prothorax* and *thorax* pale yellow, the latter with an

obscure brownish humeral stripe and the lateral sutures black above.

*Legs* black, the coxae, trochanters and anterior femora yellow.

*Abdomen* bright citron yellow marked with black as follows: A broad dorsal band from the 2nd to 9th segments, the bases and apices of each segment narrowly and the outer borders finely. Segment 1 has a transverse basal band indented apically in the middle line, segments 2 and 3 have each a fine transverse black ridge. Segment 10 very small, entirely yellow.

Anal appendages conical black.

*Wings* hyaline, the bases palely saffronated, this colour gradually becoming lost as far as the node, pterostigma brownish, the costal and posterior borders broadly blackish; trigones traversed once in all wings; nodal index  $\frac{8.11}{7.8}$   $\frac{9.8}{7.9}$ .

The low lying lamina of the genitalia separates this species from *B. sobrina*, whilst the large number of antenodal nervures and the very extensive basal marking of the wings separates it from all other species.

#### *Pantala flavescens* Fabr.

*Pantala flavescens* Fabr. *Suppl. Ent. syst.*, p. 285 (1798),—Hagen, *Syn. Neur. N. Amer.*, p. 142 (1851),—Palisot de Beauvais, *Ins. Afr. Amer.*, p. 69, tab. 3, fig. 4 (1805),—Ramb. (*Libellula viridula*), *Nevr.*, p. 38 (1842),—Burm. (*Libellula analis*) *Handb. Ent.*, 2, p. 852 (1839),—*Id.*, *ibid* (*Libellula terminalis*), 2, p. 852 (1839),—Kirby, (*P. flavescens*) *Cat.*, p. 1 (1890),—Ris *Cat. Coll. Selys*, Fasc. XV, p. 917 (1913), etc.

1 ♀ South of Puti, 3 ♂♂ South of Tsehimpo, 5 ♂♂ and 12 ♀♀ Chitien Region, Yangtse Valley.

A cosmopolitan species much given to migration.

#### *Anotogaster annandalei*, sp. nov.

(Figs. 1 and 1a.)

A single ♂ from West of Pungtzula.

*Male*. (Female unknown). Abdomen 55 mm. Hindwing 44 mm.

*Head*. Eyes pale olivaceous brown; labium ochreous; labrum bright citron-yellow bordered with black and with a median prolongation of the black at the base; lower epistome dark brown, the upper bright yellow with a pale brown centre; frons golden brown, darker above; occiput raised, yellow fringed with long black hair.

*Prothorax* black, the posterior lobe with a lateral yellow spot.

*Thorax* black with a greenish yellow antehumeral stripe on the dorsum broader above than below. Laterally greenish yellow with a broad black stripe between the two lateral sutures marked above and below with two small yellow spots. Legs entirely black.

*Wings* entirely hyaline; pterostigma dark brown; all trigones traversed once, subtrigones entire; nodal index  $\frac{13-17}{11-12}$   $\frac{17-18}{12-11}$ ; loop 7 cells; pterostigma 2-3 mm. long.

*Abdomen* black marked with yellow as follows: second segment with a subdorsal spot just behind the jugum on either side and a lateral spot below it, apically a

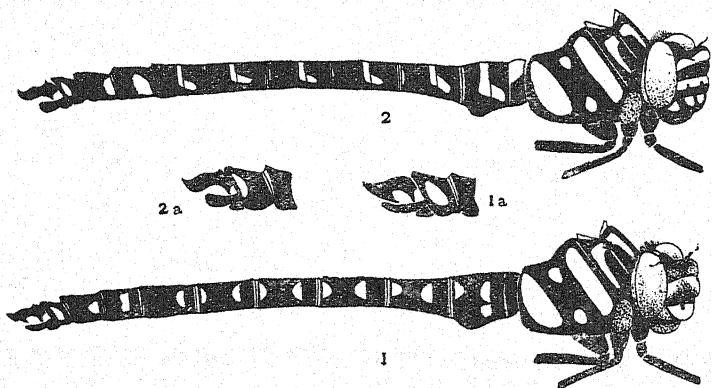


Fig. 1. *Anotogaster annandalei*, sp. nov. showing markings of head and body.

Fig. 1a. Anal appendages seen from the side.

Fig. 2. *Anotogaster gregoryi*, sp. nov. showing markings of head and body.

Fig. 2a. Anal appendages seen from the side.

pair of subtriangular subdorsal spots; segments 3 to 6 with a pair of subbasal and a pair of apical subdorsal spots; segment 7 has the subbasal spots only but there is a tiny spot of yellow low down on the sides at the base; segments 8 and 9 similar to 7 but the spot on 8 is reniform in shape and 9 has not the basal lateral spot; segment 10 has a single large oval oblique subdorsal spot. Segment 1 unmarked.

*Anal appendages.* Superior with a robust spine at the base beneath and a second one beneath the apex which is strongly pointed.

Differs from the following (*Anotogaster gregoryi*) by segment 1 being unmarked and segments 2 to 6 being

spotted instead of striped. From *Anotogaster basalis* and *nipalensis* by the abdomen being spotted instead of striped.

*Anotogaster gregoryi*, sp. nov.

(Figs. 2 and 2a.)

A single male from near Chitsung, Valley of Yangtse and a single female from near Kakatang.

*Male.* Abdomen 58.5 mm. Hindwing 46 mm.

*Head.* Eyes brownish; labium brownish yellow; labrum black enclosing 2 large transverse oval yellow spots; lower epistome black, upper black traversed by a broad yellow stripe which is invaded by the black as two small indentations below; frons black, the crest bright yellow; occiput raised in a thin ridge, black, fringed with black hairs.

*Thorax* black marked with greenish yellow exactly as in the last species. Legs black, the posterior femora with a row of very short, very closely set, robust spines.

*Abdomen* black marked with greenish yellow as follows: Segment 1 with the dorsum broadly, the marking expanding apically, segments 2 to 7 with yellow annules which cross the dorsum just behind the jugal suture and below turn abruptly and obliquely forward; segment 8 has a large lateral subbasal spot; segment 9 a smaller basal spot and 10 an oblique oval apical spot.

*Anal appendages.* The superior with only a basal spine, the apex tapering and without a spine beneath. Inferior shorter and broader than that of *A. annandalei*.

*Wings* slightly and uniformly saffronated but rather more deeply along the costal borders. The extreme apices slightly enfumed.

*Trigones* in forewings traversed once, in hindwing entire; subtrigones entire.

Nodal index— $\frac{10-16}{10-11}$   $\frac{17-17}{12-10}$ ; pterostigma dark brown, 3-4 mm. long.

*Female.* Abdomen 58 mm. (without ovipositor). Hindwing 50 mm.

Similar to the male in most respects. Wings are similar but *there is no basal marking*. Costa black outwardly, yellow inwardly; nodal index  $\frac{13-19}{11-14}$   $\frac{19-15}{13-14}$ ; apices not enfumed. Membrane white; trigones of forewing with 2-3 cells, that of the hind with 2 only.

*Abdomen* similar to the male but apical transverse spots on segments 2 and 3 (from 2 to 6 in the male)

segment 9 has a narrow basal line and 10 is entirely unmarked.

*Ovipositor* 9 mm. in length, black.

Differs from *A. annandalei* as mentioned above, from *A. nipalensis* and *A. basalis* by the wings not being saffronated at the base in the female. From the male of *A. basalis* by the rings on the abdomen being much more narrow and prolonged forward below. Lastly from the male of *A. nipalensis* it is distinguished by the brightly contrasted markings of the face.

### Heterogomphus sp.

(Fig. 3.)

A single female from West of Lichiang. (In bad condition.)

*Female*. Abdomen 47 mm. Hindwing 40 mm.

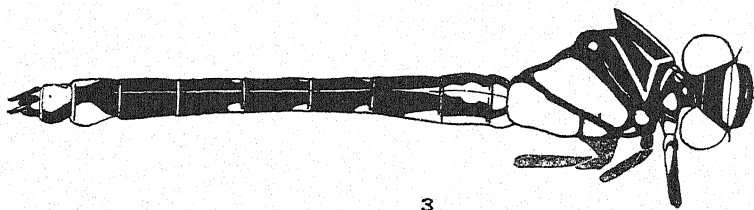


Fig. 3. *Heterogomphus*, sp. showing markings of head and body.

*Head*. Labium with lateral lobes bright yellow, the middle black; labrum and face entirely black; frons traversed broadly in front and above with yellow; occiput black, raised into a thin yellow lamina behind fringed with long black hairs. The lamina pointed at its centre.

*Prothorax* black marked with yellow as follows: A geminate spot at its centre with two smaller spots on either side of it in front, a thin collar in front and a stripe across the posterior lobe behind. Lastly a large lateral spot.

*Thorax* black marked with yellow as follows: A complete mesothoracic collar joined to an oblique dorsal band on either side and to a fine medial line on the mid-dorsal carina. Antehumeral stripes represented by an upper spot and a fine line below the spot. Laterally yellow, the postero-lateral suture mapped out in black.

*Legs* black, long and robust, a lateral band of yellow

on the first pair of femora and the coxae coloured the same. Hind femora with a row of very short widely spaced spines.

*Abdomen* black, marked with yellow as follows: The sides of segments 1 and 2 and basal half of 3 broadly, the dorsum of segment 1 with a broad quadrate spot, a trilobed one on the dorsum of 2 which is continued as a tapering mid-dorsal line on 3 to 7, segment 9 has a large subtriangular dorsal spot with its apex point-basalwards, segments 4 to 7 have small gradually decreasing spots low down on the sides at the base of the segments whilst 8 has a very large lateral spot rather diffuse and bordered with yellowish brown. Segment 9 is bordered narrowly with yellowish brown whilst 10 has a pair of small dorsal basal spots. Segments 7, 8 and 9 are broadened laterally.

*Anal appendages* small conical black.

Vulvar scale very tiny, deep shiny black, bifid at apex and deeply grooved.

*Wings* hyaline; nodel index  $\frac{13-15}{12-10} \frac{13-14}{10-13}$ ; no basal nervure of the second series, all trigones, subtrigones and hypertrigones entire: 5-6 rows of postanal cells; 3 rows of cells between *Mi* and *Mia*, pterostigma very long, dark brown. Two transverse nervures between *Mi-iii* and *Miv* in forewing, only 1 in the hindwing.

The specimen is fully adult as the wings are uniformly enfumed.

The species is evidently closely allied to *H. risi* and *H. bicornutus* but is easily distinguished by the armature of the occiput.

### *Matrona oberthuri* (MacLach.).

(Fig. 4.)

*Matrona oberthuri* (MacLach.) *Ann. Mag. Nat. Hist.*, 6, No. 77, XLVI, May (1894).

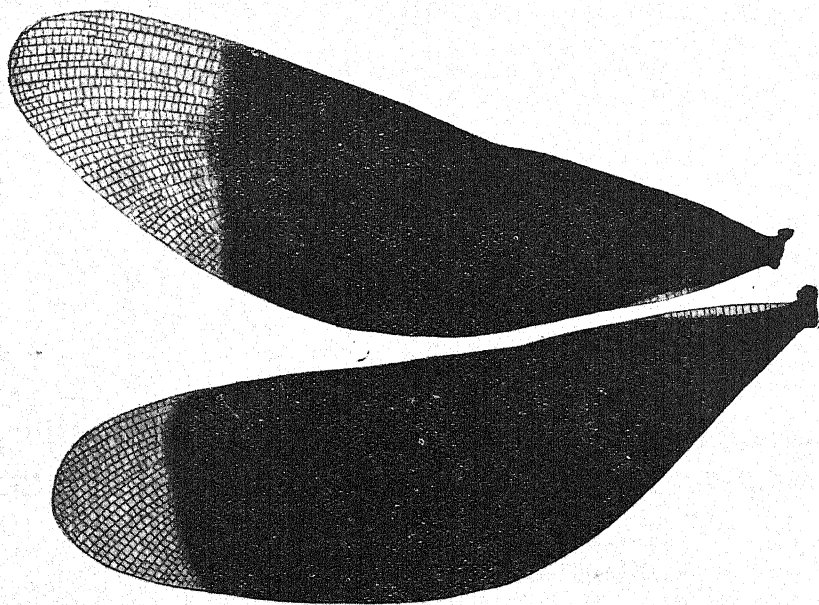
3 ♂♂ South of Lichiang, 1 ♀ near Chienchuan Chou.  
*Male.* Abdomen with appendages 54 mm. Hindwing 39 mm.

*Eyes* blackish brown. Head, thorax and abdomen green metallic with a golden or coppery reflex. The lower epistome is a brilliant golden bronze. Legs black, very long and slim, tibial and femoral spines slim and very long.

*Anal appendages* black, narrow and subcylindrical in the basal half, flattened and dilated somewhat in the apical half, furnished with a number of short spines on the outer border, the apices curving in and downwards,

nearly meeting. Inferior appendages much shorter, cylindrical, tapering, apices blunt.

*Wings* broad and spacious, deep blackish brown except the outer fifth of the forewing and a much smaller area in the hind which is paler and only palely enfumed. In the second male the outer fourth of forewing and outer fifth of the hind exhibit this hyaline area, the clear area in the forewing being much better defined than in the hind. Pterostigma absent in all wings. reticulation very close, 55 antenodal nervures and 116 post-nodals in one forewing; basal space reticulated, this



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Fig. 4. Wings of *Matrona oberthuri* MacLach.

forming a network near the arc; trigones with 17-20 transverse nervures; basal-radial space open.

All transverse nervures proximal to the node are pale bluish white, this being more pronounced than in *M. basilaris*.

This species is closely allied to *M. basilaris* and *M. nigripes*. It may be distinguished from both by the hyaline apices of the wings, although I have recently seen some specimens of the latter species from the Chin Hills in which there was also a distinct indication of

clear areas at the apices of the forewings. The basal nervures in these were not however bluish white as in *oberthuri*.

The single female received is very similar to the male. The inner three-fourths of all wings are dark brown the outer fourths pale brown. There is a tiny, white rudimentary pseudostigma in all wings, so small as to be hardly noticeable. It would be better to say that at the site of the normal stigma there is a slight divergence of the radius and costa, which enclosed area is palely white and traversed by about 4-5 nervures. The borders of all wings are finely margined with dark brown. (End of abdomen missing.)

I have no doubt that this insect and MacLachlan's *Calopteryx oberthuri* are one and the same. The descriptions agree as also do the measurements. The type specimen was taken further to the north, in Szechuen, but I cannot say where it reposes at present as I do not remember seeing it in the MacLachlan collection when looking through the latter in 1920.

*Mnais gregoryi*, sp. nov.

(Fig. 5.)

2 ♂♂ near Chitsung, Yangtse Valley.

*Male.* Abdomen 45 mm. Hindwing 38 mm.

*Head.* Labium black, labrum and rest of head brilliant coppery metallic, the occiput more dully so.

*Prothorax and thorax* bright coppery metallic, green in some lights, the sides of the thorax low down and the whole of the dorsum pruinosed white as in *M. earnshawi*. The metepimeron olivaceous, non-metallic. Legs black, long and slim; tibial spines long; claws bifid.

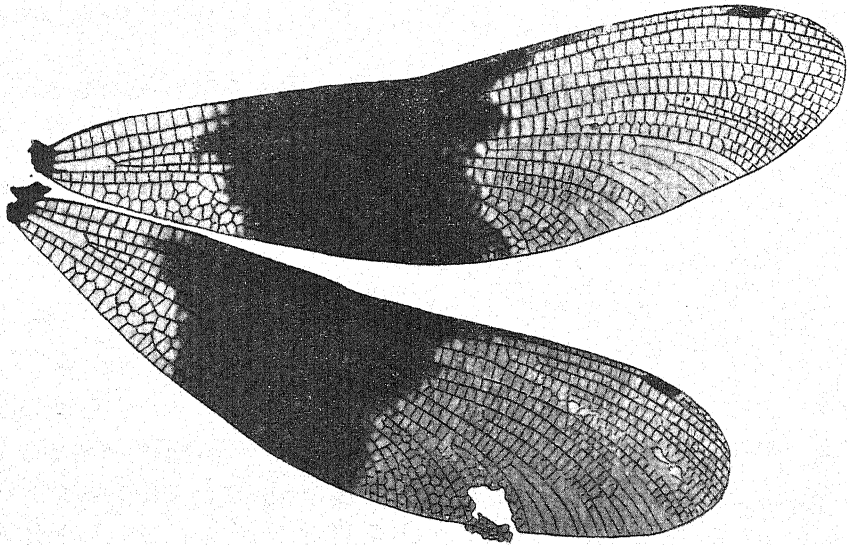
*Abdomen* black, with a coppery reflection, segments 1 to 3 and 8 to 10 pruinosed white.

*Anal appendages* black, superior cylindrical at the base, flattened thereafter angulated strongly inward near the base, broadening towards the apices, which nearly meet. The outer border finely spined.

Inferior shorter, cylindrical, tapering, the apices curving slightly upward.

*Wings* hyaline, all traversed by a broad blackish brown fascia which extends from the outer end of the trigone to about half-way to the pterostigma. The inner border of fascia irregular in the forewing, oblique from before back in the hind, the outer border crenulate and very irregular in both wings, prolonged finely along the

costal margin. Pterostigma present in all wings, dark brown, inner end very oblique but not braced, outer end nearly straight, posterior border strongly convex backward. Reticulation very close, in some places two rows of cells between the radius and costa, especially is this the case after the stigma; arc at the 3rd antenodal in all wings, 29 antenodal nervures, 41 postnodals in forewing, 27 and 44 respectively in the hind; basal space entire; 12 cubital nervures; trigones traversed six times in forewing, 5 in the hind; sectors of arc springing



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Fig. 5. Wings of *Mnais gregoryi*, sp. nov.

from slightly below the centre of arc. Basal-radial space open.

Bulb of penis very tumid; hamules broad and spreading laterally. Distinguished from other species of *Mnais* by the broad black fasciae completely traversing the wings. The elongate pterostigma and the presence of two rows of cells after this structure place it in the palaearctic group of *Mnais*.

***Mnais maclachlani*, sp. nov.**

(Fig. 6.)

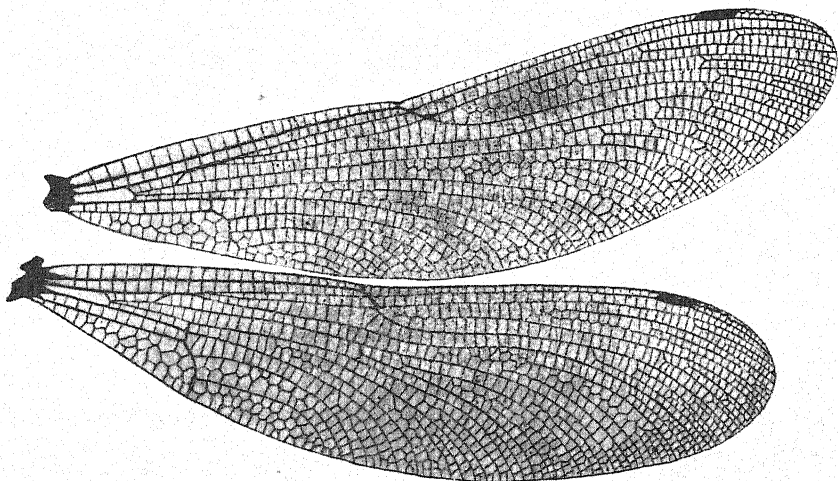
A single male south of Puti.

*Male.* Abdomen 30 mm. Hindwing 38.5 mm.

*Head, thorax and abdomen* green or coppery bronze metallic according to the angle of view. Thorax not pruinosed although the specimen appears to be fully adult. Legs, long and slim, black.

*Wings* hyaline, slightly enfumed, the clouding being blackish, not olivaceous. Pterostigma elongate, squarish outwardly, very oblique inwardly, followed by 2 rows of cells as in the last species. *Cui* ends beyond level of node.

The insect is possibly a local race of *M. andersoni* from which it may be distinguished by the wings not



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Fig. 6. Wings of *Mnais maclachlani*, sp. nov.

being of an olivaceous tint, by their much greater length and by the black pterostigma.

Unfortunately the last four segments of the abdomen are missing and Professor Gregory's notes do not give any indication as to whether these were pruinosed or not. He does, however, mention this fact in the case of *M. gregoryi* so that I infer the end segments of the present species were not pruinosed. If so this would be an additional peculiarity separating it from *M. andersoni* and *M. pruinosa*.

#### *Caliphaea confusa* Selys.

*Caliphaea confusa* Selys. *Bull. Acad. Belg.*, (2) vii, p 439 (1859),  
—MacLach. (*Caliphaea consimilis*), *Ann. Mag. Nat.*

*Hist.*, 6th series, No. 77, XLVI (1894),—Id., (*Notholestes elwesii*) *Ent. Month. Mag.*, XXIV, p. 31 (1887).

3 ♂ near Aiwa in the Mekong Valley.

Not differing from type and similar to specimens I have received from Assam. The type is from Nepal. MacLachlan's specimens were from North of Yunnan.

### *Anisopleura furcata* Selys.

*Anisopleura furcata* Selys., *Ann. Mus. Civ. Genova*, (2) X (XXX), p. 488 (1891),—Williamson, *Proc. U. S. Nat. Hist. Mus.*, XXVIII, p. 181, fig. 13,—Laid. *Rec. Ind. Mus.*, Vol. XIII, p. 31 (1917).

1 ♂ near Aiwa in the Mekong Valley, 1 ♂ South of Puti, 28. vi. 22.

The species has not been recorded further north than Burma so far.

### *Rhinocypha iridea* Selys.

*Rhinocypha iridea* Selys., *Ann. Mus. Civ. Genova* (2) X (XXX), pp. 492-494 (1891),—Laid. *l.c.*, p. 37 (1917),—Williamson, *l.c.*

3 teneral ♂ ♂ 1 adult ♂ and 2 teneral ♀ ♀ at Yung-Chang, on bushes overhanging streams, etc., and between Lu-chang and Fei-lung, on path above the river Mekong.

Originally described from Burma. I have seen specimens from the Chin Hills. The present record is the most northerly limit of its distribution so far noted.

### *Rhinocypha spuria* Selys.

*Rhinocypha spuria* Selys., *Bull. Acad. Belg.* (2) XLVII, p. 388 (1879),—Williamson, *l.c.*, p. 177 (1905),—Laid., *l.c.*, p. 37 (1917).

A single adult male from Yung-Chang, on bush overhanging stream.

Originally described from the Khasia Hills, has also been recorded from the Chin Hills, Burma. I have seen a good number of examples from Assam from which the present specimen does not differ in any respect.

### *Indolestes coerulea*, sp. nov.

(Figs. 7, 7a and 7b.)

A single female from near Chitsung, Yangtse Valley.

Whole of head except the labrum and epistome matt black; labrum turquoise blue finely bordered with black;

epistome similar; labium whitish. Eyes olivaceous above, bluish green at the sides and below.

*Prothorax* black on the dorsum, blue at the sides, posterior lobe simple, rounded.

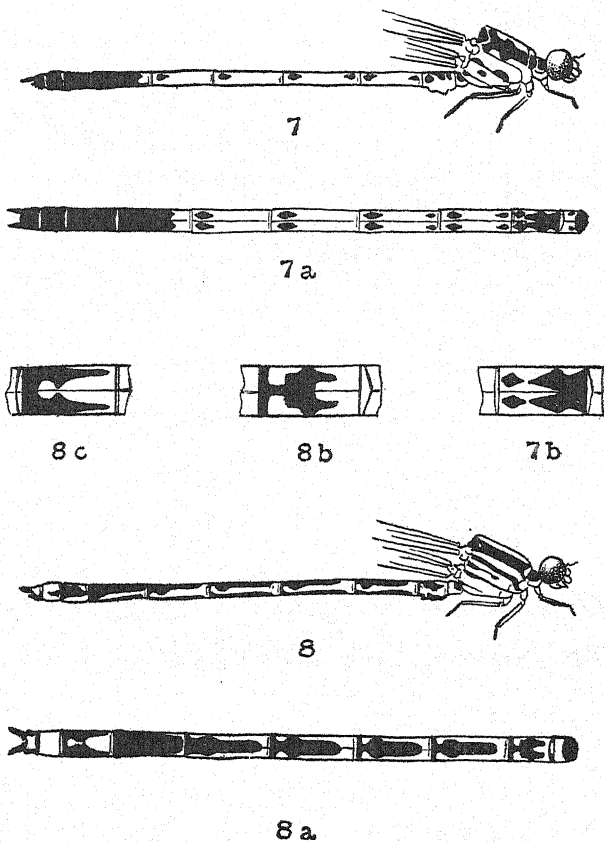


Fig. 7. *Indolestes coerulea*, sp. nov. showing markings. 7a. Markings of abdomen seen from above. 7b. Markings on second abdominal segment seen from above.

Fig. 8. *Coenagrion dorothea*, sp. nov. showing markings. 8a. Markings of abdomen seen from above. 8b. Markings on second abdominal segment seen from above. 8c. Markings on eighth abdominal segment seen from above.

*Thorax* turquoise blue, the dorsal carina and alar sinus finely yellow, tergum spotted with blue. Dorsum marked with a trilobed band as in *L. praemorsa*, matt black in colour. Laterally an upper and lower spot

on the antero-lateral suture and a small spot of black between and behind these.

*Legs* yellow, femora black on the extensor surface, the tibiae on flexor surface.

*Abdomen* turquoise blue, brownish beneath. Marked with black as follows: Segment 1 with a dorsal quadrate spot not extending to the apex and a small spot on either side of it, segment 2 with a dorsal spot constricted in its middle and deeply bifid at its apex which reaches about one quarter of the length of the segment from its apex. At the apex of each of the bifurcations a small diamond-shaped spot, segments 2 and 3 have small subdorsal, subbasal spots and larger subapical subdorsal spots, 5 and 6 similar but without the basal spots, 7 entirely black save for a broad blue basal ring, segments 8 to 10 all black.

*Anal appendages* black, as also are the ovipositor and vulvar scales. Abdomen 29 mm. Hindwing 16 mm.

*Wings* uniformly enfumed; pterostigma black, a little more than twice as long as broad, squared at both ends but the inner a little oblique. Postnodal nervures in forewings 12, in the hind 11.

The markings of this species are remarkably similar to those of *Indolestes indica* from Assam but the ground colour in the latter is pale brown. I only know of one other species of *Indolestes* in which the ground colour is blue, a new species from Coorg. In this latter the markings are entirely different both on the thorax and abdomen.

#### *Calicnemis eximia* Selys.

*Calicnemis eximia* Selys., *Bull. Acad. Belg.* (2) XVI, p. 160 (1863), *Id.*, *Mem. Cour.*, XXXVIII, p. 130 (1886), Kirby, *Cat. Odon.*, p. 131 (1890),—Selys, *Ann. Mus. Civ. Genov.* (2) X, p. 72 (1891), Martin, *Mission Parie (Neurop.)* (sep.) p. 18 (1904),—Selys (*Calicnemis atkinsoni*), *Ann. Mus. Civ. Genev.*, (2) X, p. 72 (1891), (♀).

1 pair near Kakatang, 1 ♀ and 3 ♂♂ near Aiwa in the Mekong Valley, 2 pairs South of P'uti, 1 ♀ South of Tsehimpo.

Most specimens are teneral, and any variation in the markings are due to this factor.

#### *Coenagrion dorothea*, sp. nov.

(Figs. 8, 8a, 8b and 8c.)

2 adult ♂♂, 1 teneral ♂ and 1 ♀ from near Shangkuan.

*Male.* Abdomen 29 mm. Hindwing 22 mm.

*Head.* Eyes olivaceous green with a darker green cap above; face pale blue marked with black, 3 tiny spots at base of labrum and a transverse line across epistome. Top of head black, with postocular spots of blue.

*Prothorax* broadly black on dorsum, azure blue at the sides and with a narrow anterior blue collar.

*Thorax* azure blue, the dorsum broadly black, a narrow humeral line of the same colour and the postero-lateral suture finely. An incomplete line above between the lateral sutures followed by a spot below it.

*Legs* pale blue, the extensor surfaces broadly black.

*Abdomen* blue marked with black as follows: Segment 1 with a dorsal basal quadrate spot not extending to the apical border, segment 2 with a wine-glass shaped mark on the dorsum, the base and stem directed apicalwards, segments 3 to 6 with dorsal stripes expanding apicalward and then contracting to join an apical ring, segment 7 black, except for a narrow basal ring and a streak of the ground-colour along the sides, segment 8 with a bifid dorsal marking, the marking complete at the apex of segment where it forms a broad ring, incomplete towards the base where it ends in two long points. Near the apex, the two pointed parts approach to nearly enclose a small spot of the ground-colour, segment 9 entirely blue, 10 blue on the dorsum. Laterally segments 2 to 7 have longitudinal black stripes low down near the ventral surface and extending the whole length of the segments.

*Anal appendages* small, narrow at the base, dilating apicalward, armed with a robust inward and downwardly directed apical spine.

*Female.* Very similar to the male. The blue colour replaced by greenish blue on the face and thorax. Abdomen azure blue as in the male and with broader markings. The goblet marking on the second segment of the male is here filled in and extends as far as the base, segments 8 and 9 are broadly black on the dorsum and 10 is narrowly black at the base. Anal appendages black. Legs bluish-green, marked broadly with black.

*Abdomen* 26 mm. Hindwing 21 mm. Postnodal nervures 12/10.

The peculiar markings on abdominal segments 2 and 8 in the male will easily distinguish this *Coenagrion* from any other.

#### *Ceriagrion melanurum* Selys.

*Ceriagrion melanurum* Selys., (pars), *Bull. Acad. Belg.* (2) XLII, p. 529 (1876),—MacLach., *Ann. Mag. Nat. Hist.* (6)

XVII, p. 374 (1896),—Krug., *Stett. Ent. Zeit.*, p. 120 (1898),—Kirby, *Cat. Odonata*, p. 154 (1890),—Laid., *Rec. Ind. Mus.*, Vol. XVI, p. 191 (1919).

1 ♂ at Yang-chang, on bushes overhanging stream.

The species is widely distributed from Burma across China to Japan.

The present specimen does not differ from type nor from specimens I have seen from Assam.

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## 42. An Essay on the History of Newar Culture.

By K. P. CHATTOPADHYAY, M.Sc. (*Cantab.*).

### SOCIAL ORGANISATION OF THE NEWARS.

#### *Preface.*

§ 1 The literature on the Newars and their country Nepal is fairly large, although in many cases the observers did not have opportunities of recording facts from direct investigation in Nepal. The documents available date from the time of the visit of the Chinese pilgrims to India right up to modern times.

The best compendium of the large mass of information is to be found in Sylvain Lévi's book on Nepal (see *infra*) where he marshals and critically examines the facts given in documents of Nepalese, Tibetan, Chinese and Indian as well as European origin. His work is, however, not directly anthropological and a detailed analysis of the social organisation was not attempted.

In this essay on the Newars, I have tried to utilise the available facts on Nepal from an ethnological standpoint. The literature examined is that given in :—

- (1) The subject index of the British Museum.
- (2) The Catalogue of the India Office Library.
- (3) The Bibliographies on Nepal in various books and articles on that country.<sup>1</sup>
- (4) Poole's index to periodical literature.
- (5) Articles on Nepal in Indian journals, utilised by a direct examination of them.

As will be seen from the references very few really important contributions have been overlooked by Lévi or been added to the literature on Nepal since his work, the chief exceptions being some very valuable notes in the Indian Census Report of 1901<sup>2</sup> and several volumes of Hodgson's manuscripts in the India Office Library. The manuscripts contain a large mass of unpublished information about the social organisation of Nepal, of which I have availed myself in part.<sup>3</sup>

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<sup>1</sup> I have not been able to examine Minayeff's article on Nepal referred to in Lévi's book, as it is in Russian, and a few others.

<sup>2</sup> Bengal, Vol. I, p. 454.

<sup>3</sup> I was directed to these manuscripts by a reference to them in W. W. Hunter's biography of Hodgson, and by the fact that the latter had promised a paper on Newar social organisation, which never appeared in print. The manuscripts have been put in order very recently.

W. W. Hunter: *Life of B. H. Hodgson*, Appendix B., London, 1896.

These two sources of information have proved of great value in drawing up a table of social groups in Nepal. Lévi had to accept Oldfield's classification of Newar castes without any check except the practically useless one of Hamilton's list (see Appendices), which itself requires corroboration before acceptance. Hodgson's manuscripts in particular have proved invaluable in this respect.

The detailed classification of the two groups of Newars, that has been rendered possible by a comparative study of the different lists has brought out definitely certain special and interesting facts, leading to the hypothesis put forward in this essay.<sup>1</sup>

§ 2. The Kingdom of Nepal, situated on the northern frontier of India, falls ethnologically into three divisions, (i) the Terai or lowlands, (ii) the valley of Nepal proper and (iii) the mountainous regions on the Tibetan side. The first and third are inhabited by people at a stage of culture which is low, compared to that of the inhabitants of Nepal proper.<sup>2</sup> The Newars who will be discussed in this essay are chiefly confined to the second of these areas and form the most numerous group of its inhabitants. The other group in Nepal is that of the Gurkhas, who are the dominant ruling people at the present time. They have, however, entered Nepal in a body only in recent times, in fact in 1768, although previous immigration of the Khas people who form the bulk of the Gurkhas has also taken place.<sup>3</sup> The Newars are the earlier people, and as already mentioned, the chief inhabitants of the valley. To them are almost wholly confined metal-working, agriculture, painting, architecture, sculpture and the literature that Nepal possesses.<sup>4</sup>

<sup>1</sup> I have purposely refrained from discussing some interesting questions that rise naturally from the hypothesis put forward as I wish to do some intensive field work in Nepal before tackling these problems. Some of them have been mentioned in the main body of the essay; others, such as the existence of a Vaiśya priestly caste, the employment of special textile material at funerals, or the monopoly of the Bandyas in working the precious metals, have not been touched upon as requiring detailed investigation, although it may be quite tempting to put forward some interesting suggestions about these facts. I have considered it necessary to add this note of explanation, to safeguard myself against the charge of inadequate utilisation of the available material.

<sup>2</sup> A brief summary with somewhat greater details will be found in the article on Nepal in the *Encyclopædia of Religion and Ethics*, vol. 9. (Edited by Hastings.)

<sup>3</sup> Sylvain Lévi: *Le Nepal*, Vol. I, p. 219 et seq. *Annales du Musée Guimet* 1905.

<sup>4</sup> Colonel W. Kirkpatrick: *An account of the Kingdom of Nepal*, London, 1811, pp. 101, 183, 186.

Francis Hamilton (Buchanan): *An account of the Kingdom of Nepal*, Edinburgh, 1819, p. 29.

Captain O' Cavanagh: *Rough notes on the State of Nepal*, Calcutta, 1851, Chap. III.

The Gurkhas are merely the military conquerors and are indifferent patrons of arts and letters; they are mainly fighters, although an outcaste group of Gurkhas includes a few artisan castes among them.<sup>1</sup>

The Newars are divided into :

- (i) Bauddhamārgis who worship Buddha, and
- (ii) Śivamārgis who worship Śiva.

The latter may be termed Hindus. Formerly the vast majority of Newars were Buddhists, and a minority Śivamārgis, but the former have been losing ground steadily for a long time in favour of the latter, who are now between a half and a third of the population.<sup>2</sup>

The Śivamārgis have an organisation similar to that of the Hindus of the plains, although of a much simpler character.

The highest caste is that of the Brahmans who are the spiritual guides of the upper castes. They are said to be

D. Wright, *History of Nepal*, Cambridge University Press, 1877, pp. 25-6 and 45.

Sylvain Lèvi: *Ibid.*, pp. 302, 306 et seq.

All these writers, except Kirkpatrick had good opportunities of observing the conditions in Nepal, during their sojourn there.

Other writers testifying to the same are :

Sir R. Temple : *Journals kept in Hyderabad, etc., and Nepal*, London, 1887, Vol. II, p. 233-4.

Percy Brown : *Picturesque Nepal*, London, 1912, Chap. III.

I. Massien : *Nepal et pays Himalayens*. Paris, 1914, Chap. VII. p. 136, 138.

H. J. Elwes, F.R.S. : Article on Nepal, Supplement of the Scientific American, Vol. 79, Jan. 5, 1915, New York, pp. 358-9.

The same opinion has been quoted—probably borrowed without any personal observation—by A. H. S. Landor in "*Tibet and Nepal*" (London 1905), Chap. V and in H. Ballantyne's, "*On India's Frontier*" (New York, 1895), Chap. XV.

Captain Smith's book entitled "*Five years in Nepal*" is full of gross exaggerations and plagiarisms—pointed out in marginal notes in the copy at the India Office Library, and also in a crushing review in Blackwood's Edinburgh Magazine, Vol. 72, p. 86 et seq.

The works of Egerton and others mentioned in the bibliography in the Encyclopædia of Religion and Ethics, Vol. 9, Nepal, contain no ethnological data.

<sup>1</sup> The ceremonially pure Gurkhas follow soldiering as their profession. Beneath them comes a group of several castes, whose water cannot be accepted. These include the smith, the cobbler, the tailor and musicians of different kinds, and the washerman.

<sup>2</sup> For convenience, the whole mass of facts has been thrown into Appendices, A to E. The summary given in the main body of the essay represents the conclusions arrived at after critical examination of the various data. Necessarily fuller details have been left out in this part of the essay. The subject matter of the appendices are :

- A. Śivamārgi Newars, excluding outcastes.
- B. Bandyas or Banras.
- C. Udas.
- D. Jyapoos, and other heterodox Buddhists, as well as outcastes.
- E. Historical lists of castes, and other evidence.

descendants of Brahmans who had originally come from Kanauj. Next in rank are the descendants of the former Hindu Newar Kings and their agnates who rank as Ksatriyas. The former warrior caste of Śreṣṭhas is also held to fall within this group, though it occupies a much lower position. There are fourteen divisions in this caste (according to Hodgson) of which a good number seem to be true sub-castes based on traditional difference of origin. Sufficient details are not, however, available for any further definite statement about them.

The third group, the Vaiśyas, comprise two castes, the Joshi or astrologer and the Achār or priests of local deities, presumably older cults adapted by Hinduism. They minister to Hinduised Newars, expound the Śāstras, and perform other religious duties, acting in fact as some kind of Brahmans.

All the three above groups are entitled to wear the thread, except some of the Śreṣṭha sub-castes. Some of these latter units, who serve as cooks and domestic servants, as well as other household menials, have been classified by one authority as Śūdras.

Another caste, the Gwā, or Nanda Gwā, the cowherds, are definitely Brahmanic Hindus and seem to have existed in Nepal for some centuries now, at least.

In addition to these, there are several castes of Newars who formerly belonged to the third order of Bauddhamārgis described later, but are now more Hinduised than the other members of that group and separated from them to some extent.

These castes are, the Bhāt, the Kou, the Tāti and the Kāthā. The Kou are merely blacksmiths, the Nou barbers, and the Kāthā dress wounds, and cut the umbilical cord at birth. The Tāti are not ordinary weavers but produce grave-clothes, called *ponga*, a kind of cotton cloth, to put on the dead of the Newars (brought by relatives) and also used in many religious ceremonies. The Bhāt are also connected with funerals; they accept the death gifts made on the eleventh day after the funeral of Newars of any caste (excluding out-castes). In the case of the Kṣatriyas it is mentioned that a piece of the brain of the deceased is kept covered with sweet-meats, the rest of the body being burnt, and this is eaten by the Bhāt on the eleventh day as he accepts the death gifts.

Finally, the outcastes of Nepal are at the present moment, all Śivamārgis; all the rest are Bauddhas.

The outcastes, however, shall not be discussed in the essay, as the account given in the Appendices is sufficiently detailed.

The Bauddhamārgis of Nepal are divided into three grades, of which the highest is that of the Bandyas or as commonly termed, Banrās. They are said to be the descend-

ants of the Buddhist monks who were compelled to break their vow of celibacy and live as householders. They still live in the Vihāras or convents, although with their wives and children.

Theoretically, a celibate Bandya holds the highest rank of all, but in practice, recluses are rare and the family man, the priestly Vajra Āchārya, is paid the highest respect. A trace of the ancient monastic life may be said to have survived in the rule about initiation to the duties of Vajra Āchārya before marriage, or in practice, before fatherhood. Beneath the Vajra Āchārya is a second rank of inferior priests mainly assistants to the Vajra Āchārya in a menial capacity in the esoteric worship. They are called Bhikshus, and are hereditary gold and silversmiths.

The greater number of Bandyas including even those who still minister to religious needs, follow secular occupations. All professions except foreign trade, and the work of outcastes (see Appendix D) seem to be open to them. Their hereditary secular occupation is however that of gold and silversmiths, of which they have a monopoly in Nepal. So far as intermarriage and commensality is concerned, the different sections of Bandyas are on a footing of perfect equality. They do not however marry into or eat with any other group. The sole exception seems to be in the case of Brahmans. Only a Brahman lad can become a member of this group although not belonging to it by right of birth. He has to be adopted by a Gubhaju and initiated before marriage.<sup>1</sup>

The next group of Baudhamārgis, is that of the Udas. They are the class of traders and foreign merchants of Nepal. They however follow other occupations also, as working in stone, wood or metal, and these do not constitute any bar to intermarriage or commensality. They can accept food from Banrās and also admit a man of this group to theirs but the converse does not hold.

The third group includes the bulk of the people. The Jyapoo, who stand at its head are mainly cultivators and constitute at least half the population of Nepal.<sup>1</sup> Besides the agriculturists, the Jyapoos have several sections (not sub-castes) following different occupations, the most important of which is perhaps that of the Kumhals or potters. The other members of the third group follow carpentry, oilpressing, and other occupations. This group of Newars is, however, largely Hinduised and rapidly becoming more so.

Three important occupations for which there are definite castes of ancient origin, in India, are lacking in Newar society. These are the physicians, the weavers and the liquor distillers.

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<sup>1</sup> Oldfield, H. A.: *Sketches from Nepal*, p. 183, London 1880.

The occupation of the first is said to have been reserved for the Jaisis, among Hindu Newars, but at present it is followed by anybody competent to do so.<sup>1</sup> The caste of weavers of common cloth does not exist in Nepal, the needs being supplied for themselves by each household. Similar is the case with liquor distilling.<sup>2</sup>

In this connection it should be noted, that in Newar Society, occupations are hereditary, and members of one craft should not encroach upon the technical duties and rights of another. Some professions, however, do not bring living wages; thus the Nalli whose traditional occupation is to paint the eye of an image at a certain religious festival, certainly cannot hope to live by that alone. They have to supplement their earnings from hereditary pursuits with something else. Such people can have recourse to any of the general professions, as cultivation, petty trade, tailoring, and porter's work which are not the special privilege of any section of the people. The duties inherited must however be performed as laid down, although the exigencies of the case may have prevented a caste or section from devoting itself to that work alone.

A peculiarity of these castes is that most of them have some function or other to perform at the various religious festivals. Some of these have been noted in the Appendices but the connection appears more intimate than these cases make out. The castes and hereditary occupational sections are in fact religious organizations as much as secular ones.<sup>3</sup>

All the above three groups of Bauddhamārgis are pure to the Newar Hindus, i.e. the latter can accept water from their hands for drinking purposes. The Banrās were especially honoured formerly as they were held to be the peers of Brahmins. The Brahmanic Hindus who have come in with the Gurkhas however, seem to consider all Bauddhas *anāchara-nīya*, i.e. impure for accepting water, etc.

§3. The traditions of Nepal do not throw much light on the details of the complex social organisation. The earliest legend describes the advent of Bodhisattva Mañjuśrī from Mahāchīna or China, to Nepal which was then a lake. The waters were drained by the sage and the land colonised by his companions. The affinity of their language with Tibetan,<sup>4</sup> as

<sup>1</sup> Oldfield and Lévi: *ibid.*, p. 187 (Oldfield), Vol. I, 246 L.

<sup>2</sup> Campbell: *Nepalese spirit still*, J.A.S.B., Vol. II.

<sup>3</sup> Lévi: Vol. I, p. 246.

<sup>4</sup> B. H. Hodgson: *Essays on Languages etc. of Nepal and Tibet*, London 1874.

G. A. Grierson: *Linguistic Survey of India*, Vol. III, Part I, Calcutta 1909.

In the absence of adequate linguistic as well as anthropometric data, I have considered it preferable to leave on one side speculations regarding a Mon-Khmer speaking people in Nepal.

well as the Mongolian features of the Newars agree with such an account of a first immigration from the north. They do not support the story of the Newars being derived from the Nāyar soldiers of Nānyadeva of Karnāṭa, said to have invaded Nepal in the eleventh century.

After the legend of Mañjuśrī follow a large number of confused accounts, all however pointing to influence or immigration from India. The accounts become a little more definite with the conquest of Nepal by Kirātas of the eastern mountains. They are succeeded by Goāla Kings and these again by Ābhīras from the plains. The Kirātas, however, impose their rule again on the country and are driven out only by the Somavamśī (lunar race) princes from India who make themselves masters of Nepal.

The Somavamśīs are soon replaced by another dynasty, the Sūryavamśīs (solar race), claiming descent from Lichchhavis. The Brahmanic onslaught on Buddhism in Nepal is said to have taken place under the rule of this dynasty.

The solar race was succeeded in the seventh century A.D. by a Thākuri (royal Rājput) dynasty, various branches of which ruled in Nepal until the invasion of the Śimhas. About 1324, Hatisiṃhadeva, a ruler of Tirhout, said to be descended from Nānyadeva already mentioned, invaded and conquered Nepal. Shortly after, however, a Hindu Newar dynasty of the name of Malla is found reigning in the country. This dynasty continued with various fortunes until 1768 when Nepal was conquered by Gurkhas.<sup>1</sup>

Lévi ascribes the beginnings of Newar civilisation to Indian influence. The light of religion, according to him, came undoubtedly through the Buddhist missionaries who discreetly adapted their creed to suit the ruder people of Nepal. Before however their labours had borne fruit, the forces of Brahmanism burst in and largely destroyed their work. According to tradition this onslaught on Buddhism was led, as in India, by Śaṅkarācārya; he crushed the Buddhist, lay and clergy, massacring some, forcibly converting others, and compelling the celibate monks to marry.

Lévi, however, suggests that the lapse of the monks from celibacy was due, not so much to the oppression of Brahmins, as to the decadence of Buddhism itself. He has supported his view with evidence from Kashmir as well as Nepal.<sup>2</sup> In addition, he formulates on these lines, a hypothesis of the origin of the Newar social organisation.<sup>3</sup>

His view is that the married clergy, still living in their ancient convents, did not find their traditional religious calling

<sup>1</sup> Summarised from Wright's and Lévi's History of Nepal

<sup>2</sup> Lévi: *ibid.*, Vol. II, p. 29.

<sup>3</sup> To be more precise he has elaborated a suggestion of Oldfield. See Oldfield, *ibid.*, Vol. II, Chap. IX.

sufficient for the new needs brought about by family life, and had to adopt secular professions. In this way the Bandyas formed into a clearly defined social class, and the material condition of their existence, added to an imitation of Brahmans, quickly hardened class into caste. The religious aristocracy thus formed regarded the ordinary layman as inferior, and the very natural unwillingness to share the privileges they possessed because of their former condition made the caste bonds more rigorous. Finally, the arts exercised in the convents, transmitted from father to son, attained a high degree of excellence, and as the knowledge was kept a secret in the monasteries, finally became monopolies.

On the other hand, the royal families of Nepal, the Lichchavis (as well as Mallas) could scarcely obtain acceptance as true Ksatriyas without opposition. Their names were too well known in Buddhist annals and the tribes had been grouped by Manu among inferior castes as Vrātya or fallen Ksatriyas. To wipe out this stain and take their rightful place among Ksatriyas, they followed the rules of caste with an excessive rigour, and thus led to the formation of a Ksatriya caste in Nepal, professing a mixed Bauddha and Brahmanic faith and thereby serving to unite the two religions.

Finally, the Brahmans who had brought the Śaiva cult from India, had also introduced among their faithful, the régime of caste, modified it is true, by the needs of time and place. In this way were formed the two divisions in Nepal, one rigidly observing the laws of caste in the matter of marriage and commensality, the other hostile in principle to caste, but already modified by contact with the other. The religious and military aristocracies at their heads formed close parallels to those of the Hindus, and the power of example given by the superior classes, was effective in fostering the growth of caste among the lower orders of the people through the force of imitation.

The conquest of Nepal in 1324 by Harisinhadeva, a Hindu king of authentic royal origin, hastened the elaboration of the social system. The invader is said to have brought with him seven castes, the Brahmans, Bhādelas (?), Āchāryas, Jaisis, Vaidyas, Rājakas and Khaḍgis (butchers). This actual caste element introduced into the population leavened the whole mass. The work of Harisinhadeva was completed by the royal Jayasthiti Malla, who invited to his court learned Brahmans from India to draw up a systematic rule of castes and customs.<sup>1</sup>

The recent conquest of Nepal by the stricter Hindus, the Gurkhas, has helped the growth of Brahmanic ascendancy still more, to the detriment of Bauddha religion, customs and social rules.

<sup>1</sup> S. Lévi: Vol I, "*La population ; les nevars.*"

§ 4. Leaving traditions aside for the time being, if the actual conditions are examined, a very striking fact becomes apparent. It is that among Hindu Newars, the only definite secular pursuit followed by any caste, except the general ones of fighting, trade, cultivation, and religious worship, is that of cowherds. All other occupations are followed by pure and mixed Bauddhas.

In the discussion on cowherds and use of cattle in general (Appendix D), it is shown that the employment of cattle was not known to Newars in ancient times, and that even at the present moment, although it might with advantage be adopted, the employment of buffaloes or oxen for any kind of work is comparatively rare. The labour of cultivation, transport, and oilpressing performed elsewhere in India by oxen, is here carried out through human agency. Further, it is shown from Chinese sources (Appendix E) that as early as the seventh century A.D. Newars were clever artisans and artists, although ignorant of domestication of cattle—in the limited sense employed here. The rulers of Nepal in those days were Bauddhas, but Brahmans and their religion were also present in the country.

It has, therefore, to be admitted that before the knowledge of domestication of cattle had penetrated to Nepal, a culture characterised by knowledge of metal, wood and stone working as well as hoe cultivation of a particular type was already in existence. Further, unless we assume that this condition grew up *in situ* making Nepal in fact the cradle of Asiatic civilization, which the traditions of the country does not warrant—we have to admit that the culture came from elsewhere. Other difficulties in the way of an evolutionary hypothesis are presented by the fact that both on the eastern and western sides of Nepal rude tribes exist, who in spite of Brahmanic influence from India in addition to contact with Newars, remain or until recently remained, without knowledge of, or with only crude idea of many of the arts carried to perfection in Nepal by Newars. The native growth of an advanced civilization like that of Newars in and before the Seventh Century A.D. in Nepal would certainly have removed such a condition among any contiguous people.

Another difficulty is the existence of different grades following practically the same occupation. An evolutionist who suggests gradation according to growing complexity of occupations, will not be able to find any reasons why there should be a hereditary section of Jyapoo as well as Uda tilemakers or carpenters, or an Uda as well as Banrā section of metalworkers. The fact that the religions may or actually have come from India where caste rules supreme, while it may lead to the growth of a superior priestly class, cannot explain such

details as these. It has, therefore, to be admitted that such a culture came from outside Nepal.

The available facts indicate that before the cultural influence referred to came to Nepal, the country was inhabited by rude and wild tribes. In the neighbourhood of the valley proper there are tribes like Dooyñ who were but recently hunters and collectors of jungle produce.<sup>1</sup> In Central Nepal there are the Chepangs and Kusundas who are ignorant of all arts, and live entirely upon wild fruits and the produce of the chase while their only dwellings are composed of boughs of trees interlaced to form some kind of shelter. On the east, there are the Kirāts, who although cultivators, possessing knowledge of some useful arts as weaving, yet have no craftsmen of their tribe and have to buy metal utensils and ornaments from others.<sup>2</sup> If therefore some allowance is made for centuries of existence of a flourishing culture in Nepal valley and India, it has to be admitted that the earlier inhabitants must have been wild tribes devoid of all knowledge of advanced arts and industries<sup>3</sup> like agriculture, metal working, etc.

Before proceeding further I shall consider how such an immigration affects a rude people and what are the conditions that may lead to different results.

The first condition determining the nature of interaction is the mode of reception, whether it is hostile or peaceful. In the case under consideration, it has been concluded that the earlier rude tribes of Nepal did not know the working of metal and the immigrants did; a hostile attitude must have sooner or later been overcome by the superiority of weapons possessed by the newcomers<sup>4</sup>; after that of course their culture would have been readily adopted by the survivors. It is more probable, however, that the reception was peaceful. In the beginning, at any rate, the number of immigrants must have been

<sup>1</sup> Hodgson: *Essays on Languages etc. of Nepal and Tibet*, London 1874, Part II, "On the Chepang and Kusunda Tribes of Nepal."

<sup>2</sup> B. H. Hodgson: *Miscellaneous Essays*, Vol. I (Trübner), "On the Kiranti tribe of the Central Himalaya," p. 400 et seq.

<sup>3</sup> It does not of course mean ignorance of the rudest and primitive arts.

<sup>4</sup> Unless the immigrants were altogether too few in number to be able to hold their own against the earlier people in spite of cultural and military superiority. In such a case, leaving out the possibility of extermination of the immigrants, when of course no culture spread or interaction can occur, the in-comers will certainly be more or less absorbed in the aborigines, depending on the difference in culture. In the case under consideration, the sharp difference in material culture postulated, would inevitably lead to the subdued immigrants acquiring a certain amount of importance, although it does not seem probable that they, or their descendants would form a superior social class marked by barriers of endogamy or forbidding of commensality. The existing social system among Baudha Newars does not point in the direction of such a type of interaction.

comparatively small, and the superiority of their culture would be more beneficial than harmful to the aborigines (in the limited sense). Unless the immigrants were specially oppressive, there would not be appreciable resentment against their domination. In Nepal, as has been shown, the earlier aboriginal people were devoid of knowledge of arts and industries, while the immigrants mentioned, possessed a fairly advanced culture. It cannot be doubted that the introduction of agriculture and other arts of life (mentioned before) would much benefit the earlier people. For a long time in the beginning, the economic gain on the part of the aborigines through contact with the advanced people would be very large, compared to their previous condition, while the prestige of the immigrants consequent on their superior knowledge of material arts, and also of the weapons of war, would soften down the resentment that might arise from the submission to these incomers, that would, of necessity, accompany this process.<sup>1</sup> The feeling of hatred against domination grows only when it is felt, in external or internal relations. By external is meant contact with others, strangers who are not in the same condition of subjection. This factor may certainly be considered negligible in the case under consideration. Internally, i.e. in the mutual relation of the people among themselves with the immigrants, the factors determining the sentiment towards the incomers will be economic and social. As has already been pointed out the economic factor must have operated in favour of the immigrants. Socially, if the rules regulating general daily life and relation with the new comers are not irksome, very little friction will occur. Unless the immigrants are specially arrogant, their superior prestige will ensure the regard of the aborigines who will probably yield that much of respect as the due of such (from their point of view) highly gifted persons. The greater the difference in culture, the more will all the factors work to promote harmony in the mutual relations.

The above suggestions are supported by the fact that the historical immigration, or more precisely, the flight to the Gurkha country, of the Brahmins and Rajputs from the plains, was received peacefully by the hill-tribes who recognised their cultural superiority. It may be pointed out that the Khas people formed as a consequence of it, certainly do not observe the irksome limitations in the matter of diet or otherwise, as the strict Brahmanic Hindu is supposed to do in everyday life. Nor does the ordinary Khas man stand socially at any humiliatingly low level below the descendants of the former immigrants. Even in the matter of sex relations, where the stricter ideas of chastity have been more adopted, the

<sup>1</sup> Any mental superiority of immigrants would of course favour such a line of development.

actual state of affairs among the ordinary Khas is certainly much different from that obtaining among those claiming descent from the pure Rajputs and Brahmans of the plains. The success of the plainsmen has been due as much to the adaptability shown by them in accommodating their rules of life to the requirement of the hill tribes as to the superiority of their culture and the consequent prestige.

The varying degrees of influence that European culture has had in different parts of the world are in harmony with this view. As Rivers has pointed out,<sup>1</sup> it has been greatest among the rude tribes and least among cultured people. In the case of India, as Rivers has mentioned, the effect has been felt mainly among the people who are at a relatively lower stage of culture, especially among the depressed classes of the south. This view is supported by a more detailed study of European influence in different parts of India. Thus it is found that among different tribes of the same race, speech and social organisation, those standing at a higher level of material culture have been much less affected than those at a lower level.<sup>2</sup>

It is also well brought out in the varying degree of success, missionaries have had in converting primitive hill tribes, as for example in Assam and Chota Nagpore, and in the reasons admitted by the workers as mainly responsible for conversion.<sup>3</sup> It is acknowledged more or less frankly that conversion depends in a great degree on purely secular, in general economic, motives.

The progress of Christianity as well as Hinduism among the primitive tribes further illustrates what has been suggested about the dependence of harmony in interaction of cultures on the absence of irksome restrictions in daily life. Thus it is admitted that in Assam, among Khasis as well as other hill tribes "the stricter standard of morality is a stumbling block" and "if the missionaries were able to relax their moral code" as regards drink, sex and rest days, "the number of their converts would in all probability be largely increased."<sup>4</sup>

<sup>1</sup> W. H. R. Rivers: "*The Contact of peoples*" in *Essays and Studies presented to William Ridgeway*, p. 474, Cambridge 1918.

The general theory of contact of peoples is further elaborated in his *History of Melanesian Society*, Vol. II, Chap. XXVIII (Cambridge 1914). It is almost superfluous to acknowledge my indebtedness for the general ideas.

<sup>2</sup> Cf. the different degree to which the Khasis and Syntengs have been affected. The latter with their superior material culture have preserved the social rules better than the Khasis. See P. Gurdon: "*The Khasis*", London 1914. This question will be dealt with in detail in my essay on "*Cultural influences in Assam*." I have therefore thought it preferable not to go into further details here.

<sup>3</sup> E. Chatterton: *Mission work in Chota Nagpore*, Chap. IX, London, 1901. Census of Assam: Report 1911, p. 38.

<sup>4</sup> Census of Assam: Report 1901, p. 45.

In the case of Hinduism the success of the Vaiṣṇava Gosāins in Assam has been admittedly due to their liberal views and very gradual tightening of the restrictions in the matter of food, drink and other items of everyday life.<sup>1</sup>

§ 5. The differentiation between the newcomers and the older people depends on another factor to a large extent; it is the relative proportion of the sexes among the immigrants. In the case of a hostile immigration, it is evident, that although the immigrants might hold an immense superiority in weapons of offence and defence, some compromise will necessarily result, if they are compelled to take women of the country as wives on account of a shortage of them in their own party. The comparatively smaller number of women in any immigration over a fairly large distance, is bound to be diminished still more in the case of a hostile reception. In such a case, however, it should be remembered that once the need of taking wives from outside had been fulfilled, the superior immigrant people will tend to exist as a separate and hostile group.

In the case under consideration however, there are neither any such mutually hostile divisions, nor any traditional indications of it in that group of Newars to whom the culture is confined. This fits in with the peaceful reception already suggested from other considerations. It should however be borne in mind that the immigrants and their descendants would undoubtedly form a class superior to the earlier people, even though the latter are friendly and adopt their culture to such extent as they are allowed, or able to assimilate.

A factor which is of importance in determining not only the total number of the immigrants, but of the relative proportion of the sexes among them, is the nature of the route. If the way to the country is difficult or the journey has to be carried out under arduous conditions, it is evident that the number of women will be greatly limited at all times, even after the first settlements may have rendered the peaceful reception of later incomers of the same people fairly certain. In that case unless some special institution like polyandry was set up, intermixture with aborigines will largely occur and the tendency will be to have a more or less pure aboriginal group, with a superior class, of mixed origin, above it. There may in addition be a small class of the highest grade, the descendants of the immigrants who could afford to have wives of their own race. This class would be greater in number, the less difficult was the access to the country; for, a larger number of women could in that case be taken to the new country.

In Nepal, the group under discussion, the Bauddhamārgis have three such divisions, ranging above one another, the low-

<sup>1</sup> Census of Assam : Report 1891, p. 216-7 gives a good account of the process of Hinduisation.

est being most numerous: but the two upper ones are also fairly large groups. The highest of these is that of Bandyas who are the religious preceptors of the members of the two other grades, and are also experts in secular professions, following them without dishonour. It has already been seen that the characteristic culture discussed is confined to Bauddhamārgis; unless therefore some revolution has occurred in the social organisation, the descendants of the immigrants ought to be at the head of it. The facts already given suggest that the Bandyas are these people.

The second grade, the Udas, resemble the Bandyas very closely in religious ideas, manners and customs. All occupations followed by the latter can also be adopted by Udas except the work of priests and of working in gold and silver. The third grade although resembling the two upper ones in general, shows the influence of the later Brahmanic migrations. This point will be considered later. In addition to the work of priests, metal working in general is also not found among the ordinary groups of the third grade. The Kou or blacksmiths who form the exception are distinguished from the others of this grade by certain peculiarities, and as we shall see later, were probably brought into Newar society in consequence of a later influence.

This existing gradation among Bauddhamārgis is such as would grow up if the ancestors of the Bandya class of the present times had come to Nepal, with a fair number of their women. In view of the conclusions arrived at in the preceding pages, it suggests that the immigrations occurred from a place not involving exceptional difficulties of travel. The comparatively easy access to Nepal from India, as opposed to the necessity of traversing lofty and generally ice-bound passes from Tibet, favours the former country as the probable earlier home of the immigrants. It should however be remembered that even on the Indian side, there are unhealthy swamp lands and a fairly mountainous country to be crossed before Nepal can be reached. Therefore it would only be the brave and hardy men, mostly unaccompanied by women, who would first penetrate to Nepal from India. It is only when some civilisation had grown up and a firm foothold gained that women could have come in any number. Such a view does not clash with what has been previously suggested. It merely takes account of the fact that migrations generally do not occur in a single mass within a short space of time, but are mostly spread over a long interval. On this view, the Udas would be the descendants of the earlier immigrants and of mixed blood and the Bandyas the later people of purer descent. The tradition among a large number of sections of the common people about descent from Banrās fits in with this view. For, some of the earliest people would inevitably be absorbed among the

aborigines and this process would continue even at a later stage, until probably conditions were so settled as to allow women as well as men of the immigrants to come freely.

The fact that metal working is confined to the two upper grades of Bauddhamārgis fits in with the hypothesis suggested. Since this knowledge constitutes the immense superiority of the newcomers, it would certainly not be taught to the common people of the country. At the same time the earlier immigrants who married women of the older race would of course pass on their knowledge to their own children, who naturally constituted a class of people superior to the aborigines. But the purer stock would retain their position above these as the bringers of culture and possessors of the Great Knowledge.

A different explanation of the origin of the three grades has been suggested by H. P. Śāstri.<sup>1</sup> The Bandyas are considered to be the representatives of the ancient Buddhist clergy who came from India, the Udas of the laymen and the common people, of the aborigines. Now, the Buddhist monks of India were celibate and tradition in Nepal also indicates that in the beginning the Bandyas were not householders; in fact even in modern times there were some Vihāras of celibate monks in Nepal.<sup>2</sup> It is therefore evident that the early monks who were celibate must have been recruited from some section of the people who were householders. Tradition mentions a Grihastha or householder class of Bauddhas who opposed Śaṅkarācārya.<sup>3</sup> According to Śāstri's suggestion, the Udas are the descendants of the householders. But if the monks were recruited from this class, it scarcely seems possible that on their own downfall the Bandyas would succeed in forming a rigid group, separated from their friends and relations, the Udas, by bars of commensality and intermarriage. For the only difference between them and the Grihasthas was in their celibacy and religious life. Once the rules grew lax and the monks lapsed from their vows, this bar would disappear. The Udas cannot therefore be the group of Buddhist laymen from whom Bandyas were evidently recruited. The available facts definitely show that from fairly remote times there were celibate monks as well as a householder class, presumably of high status, from which the ascetics were recruited. There could not have been any difference between these two groups, except the limits imposed by monastic rules and, with the growing abandonment of the vow of celibacy, these also have disappeared.

<sup>1</sup> Mahāmahopādhyāya Haraprasād Śāstri. In the introduction written by him to N. Vasu's "*Modern Buddhism*," Calcutta, (no date), pp. 19-20.

<sup>2</sup> Lévi: *ibid*, Vol. II, p. 29.

<sup>3</sup> Lévi: *ibid*, Vol. II, p. 26. D. Wright: *ibid* Chap. II.

It has been suggested by Lévi and others (already mentioned) that the light of religion was brought to Nepal by Buddhist monks. It may be suggested, that culture also was brought by them from India. But such a condition requires that the development of Newar society proceeded on different lines from what can be inferred from existing facts. The monks being celibate would leave no descendants<sup>1</sup> and the culture would be given completely to their followers. A real imposition of religion requires some time and it may be presumed that the culture brought would also be fairly assimilated in that period. After civilization has been brought in this way, the immigration of lay people would not be difficult, for the initial difficulties will then have disappeared. They would however not be able to occupy a greatly superior position to the now civilised aboriginal wild tribes. The result of such a development would be to have two communities existing side by side, the relative positions being determined by the equilibrium of the immigrants and their inferior members as well as the degree to which the earlier people had assimilated their culture. The existing conditions, however, rule out such a development.

On the other hand, any hypothesis which suggests that the religion and material culture come from two different sources, has to face a good many difficulties, one of the most important being the remarkable homogeneity in manners, customs and ideas of religion among all three grades.

It has been suggested that most of the arts of the Newars had been derived from Tibetans.<sup>2</sup> The first difficulty that such a view has to meet is that it ascribes the introduction of religious ideas and material culture to two widely different sets of people. For, the birth of Buddhism proper in the lowlands to the south of Nepal and the early existence of that religion in that country rules out as exceedingly artificial, any hypothesis that the religion first went to Tibet and then entered Nepal by that route.<sup>3</sup> It is not of course suggested that later Tibetan and Chinese influences have not had any effect on Nepalese Buddhism.

Allowing therefore that the religious ideas mainly came from India, the difficulty arises as to how in such cases the priestly Bandyas managed to impose their religion to the extent

<sup>1</sup> I preclude the theoretical possibility of a wholesale lapse of monks from their vows. Only zealous apostles of religion would go so far outside their country to spread their faith and this minimises the possibility of such a downfall. In that case however, they merely take the place of the early bold immigrants who had to take indigenous wives.

<sup>2</sup> Hamilton: *ibid.*, p. 29.

<sup>3</sup> Father Giuseppe: *Asiatic Researches*, Vol. II, (1799) indeed suggests that the religion as well as the monastic institution are derived from Tibet.

they have done, and to raise themselves so high in Newar society, apart from the very important objection on the score of the great homogeneity existing in manners and customs in the different grades, especially the two upper classes, of Newar society. As has been pointed out, the influx of a group of people with a superior material culture would lead to the formation of a class of people superior to the common mass. An immigration from the Tibetan side would indeed differ from one on the Indian side in the smaller number of women accompanying the incomers. Unless however the number of women was practically negligible, there would be three classes formed in the society evolved out of interaction, although the highest grade, the pure descendants of the immigrants, would be very small in numbers. On any hypothesis which regards the Bandyas as the descendants of later immigrants from India who brought the religion, the Udas have to be considered as representing the bulk of the descendants of the culture bringers from the Tibetan side. Apart from the absence of any superior and inferior grade among the Udas—which of course is a minor difficulty—the question arises how the Bandyas succeeded in converting the Udas and holding them in a position of definite inferiority. As has already been seen, a cultured people is far more resistive against such outside influences.

It may be suggested that the prestige of the civilization in the plains of India and the political power of the rulers with whom the missionaries were perhaps connected led the cultured Newars to adopt the religion and conform to the manners and customs of the ancestors of the Bandyas.

It may be admitted that among some border people of India, such a process has actually taken place, as for example, the Ahoms in Upper Assam, the Koches in Koch Bihar and the Meitheids of Manipur.<sup>1</sup> It may in addition be pointed out that while these people who thus accepted a religion (in this case Brahmanic Hinduism) and adopted certain social rules did not lower themselves appreciably below their spiritual guides, yet as soon as their political dominance was lost they sank below their former social position. It may be suggested that such has also been the case with the Udas. But it should be remembered that in the cases quoted where such conversions are known to have occurred, the people though politically dominant were decidedly inferior in material as well as mental culture. Such cannot be said to have been the case for the hypothetical descendants of the culture bringers from the Tibetan side. The treatment accorded to Bandyas themselves by later

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<sup>1</sup> E. A. Gait: *A History of Assam*, Calcutta 1906. T. C. Hodson: *The Meitheids* § 4, London, 1908.

Hindu Brahmanic political rulers in Nepal itself suggests quite different and opposite conclusions.

In addition, such a theory fails to account for the intimate connection of many of the occupational sections with religious duties, especially in connection with Matsyendranātha. This deity seems to be unknown in Tibet, while in India, although absent from the purely Brahmanic or Bauddha pantheon it occupies a prominent position in the worship of the Indian yogis, who revere Matsyendranātha, and Gorakṣanātha as their first masters. The latter, it may be pointed out, is the patron saint of the neighbouring Gurkha country in the kingdom of Nepal.<sup>1</sup>

It may be objected that Matsyendranātha is not a Bauddha deity proper and therefore as the official religion of the Bauddhamārgis of Nepal is certainly Buddhism, the hypothesis suggested by myself fails to agree with the facts. This particular special deity of Newars, however, not being known in the Brahmanic or Bauddha pantheons, merely suggests that the deity was known in Nepal before Buddhism came there. For it is highly doubtful that a deity like Matsyendranātha could suddenly come to Nepal after Indian Buddhism had established its hold there, and for no particular reason enter intimately into the life of the community and its social structure. The festival of Matsyendranātha opens the religious year, and it is held by the Newars to be the most ancient of the different Yātrās or processions. It brings the spring rains; in fact without its efficacious action the heavens will refuse their waters for cultivation. The tradition of the advent also of this deity is connected with the ending of a drought in Nepal by his intervention. There however his rôle is to release the Nāgas who are the givers of the waters from the heavens, as well as subterranean springs. The great function of Matsyendranātha therefore seems to be to ensure the water supply of Nepal. The fact that cultivation is the most important source of production in the valley of Nepal and that irrigation is invariably employed explains the importance of such a deity to the Newars. At the same time, it suggests that the god came into or developed in Nepal with the people who taught irrigated cultivation to the aborigines. The Newar name of the deity is still Buga and as Lévi has suggested the names Lokeśvara (Buddhist) and Matsyendranātha were probably given later to an earlier god in order to make it fall in line with the official religions.<sup>2</sup>

<sup>1</sup> Lévi: *ibid.*, Vol. I, p. 347-54.

J. C. Oman: *The Mystics, Ascetics and Saints of India*, p. 184-6. London, 1903.

*Gazetteer of the Bombay Presidency*, Vol. VIII, 1884. p. 447.

<sup>2</sup> Lévi: *ibid.*, Vol. I, *Les divinités locales*, p. 356. Kirkpatrick, *ibid.*,

The particular sect in India which worships Matsyendra-nātha and especially his pupil Gorakṣanātha (associated intimately with him in the traditions), is the Kānpḥātā subdivision of Śivite Yogis. One of the most important parts of their initiation consists in slitting up the cartilage of the ears, distending them and wearing rings of glass, agate or horns of oxen in them. These ornaments, often weighing  $2\frac{1}{4}$  ounces, are looked upon as specially sacred, and once lost cannot be replaced. How important these are may be gathered from the fact that if the ear tore apart after the ring had been inserted, the man was considered useless and in former times used (it is said) to be buried alive.<sup>1</sup> The intimate association of the peculiar practice of mutilating the ears with a deity who presumably came to Nepal with the early culture bringers, fits in with the mention in the Chinese annals, of the custom of distending the ear lobes, practised by the Nepalese at a time when they are described as ignorant of plough cultivation with the help of bullocks (Appendix E). It suggests, in fact that the artificial distension of the ear was practised by the bringers of culture who introduced the prototype of Matsyendranātha. It is not meant however that the exact practice as such was brought from outside, it is quite possible that something similar came in with the immigrants and developed into the practice gradually. The question can however be settled only with the collection of greater details and a general survey of the whole question of distension of the ear lobe in other parts of the world, and its origin.

The views put forward just now about the introduction of the god Buga or Bhoogadeo raises an objection which must be met before proceeding further. It may be said that while a hypothesis of the cult of a prototype of Matsyendranātha having been brought to Nepal by the original culture bringers may agree with the facts given about this deity, it does not explain the dominance of Buddhism among the descendants of these people. For Matsyendranātha is not an official Bauddha deity, although in Nepal the actual relation of this god to Buddhism is very intimate and close. It has been shown before for the general case of immigration, and applied a number of times when discussing the question of migrations and their effect in Nepal in particular, that a people with a fair amount of culture do not get converted wholesale suddenly to a new religion coming from elsewhere. The social organisation and traditions of Nepal show no trace of the particular creed in question

p. 190, gives the name Bhoogadeo. Father Giuseppe: *Asiatic Researches* II, (1799), p. 399, gives it as Baghero.

<sup>1</sup> Crooke (IV.): *Tribes and Castes of N. W. Provinces*: § Kanphata.

Russell: *Tribes and Castes of Central Provinces*: § Kanphata.

Bombay Gazetteer: *ibid.*, p. 155, pp. 443-7.

Maclagan: *Census of Punjab, 1891*, pp. 114-15.

(Buddhism) having been imposed by exceptional measures of force by any later (presumably Buddhist) invaders of the country. It was therefore adopted voluntarily. In view of the strong conservatism displayed by the Newars towards the adoption of elements of foreign culture, in its material aspects at any rate, when it would have been advantageous for them to do so, it may be admitted that they would not have easily adopted an absolutely foreign religion coming from a foreign people. I therefore suggest that this religion did not come to Nepal from men of a foreign culture, but that it was developed among people of the same civilization. This would mean, of course, that a good many of the elements of Buddhism were in existence in Nepal, in the undeveloped state if I may so term it, before that religion came to the country in its official form. It may however be said, why in that case these elements did not develop in Nepal itself. Historical facts and traditions of Buddhism show that the people among whom it rose, were in contact with Brahmanic culture, i.e. a civilization of a different type. The impulse that would be derived from this source, might be absent in Nepal because of its comparative isolation from the rest of India. A detailed discussion of the origin of Buddhism can however be undertaken only after a critical survey of the social organisation of the rest of India and must be left out in this essay.

§ 6 It has already been evident that the early culture of Nepal probably came from India. The facts leading to this conclusion up till now have been drawn from social organisation, and religion. The evidence from arts and crafts also seems to support this view. The data on these matters, however, is not so copious as could be desired.

The evidence from metal-working, carpentry and the related arts is indecisive. It is indeed true that the cleverest smiths in Tibet are the Newars who have gone there; further, that the Tibetans are clumsy carpenters and jewellers.<sup>1</sup> It is also true that formerly, over a long period, the Nepalese

<sup>1</sup> Huc: *Travels in Tartary, Thibet and China 1844-6.* (Translated by Hazlitt), London (no date), Chap. V.

The actual name given of the Newars in Lhasa, by Huc, is Pèboun. Lévi rightly (*ibid.*, Vol. I, p. 307) concludes that the reference is to the Newars. This point is settled by Tsybikoff's statement (see below) that the Newars are the cleverest dyers and smiths in Lhasa and that these Baudhas are called Ba(1) bo in distinction from the Gurkhas of Nepal.

J. H. Dutreuil de Rhins and F. Grenard, *Mission scientifique dans la Haute Asie*, Paris, 1898, II, p. 371.

C. H. Desgodins: *Le Thibet*, Paris, 1885, pp. 385-90.

C. Tsybikoff: *Lhasa and Central Tibet*: p. 730 (from the translation from Russian given in the Annual report of the Smithsonian Institution, 1903).

Tsybikoff's evidence is specially valuable as he was a Buriat by birth, Lamaist by religion, educated at a Russian university, and stayed in Lhasa as a pilgrim for a whole year like so many other Buriats.

were the architects of the temples, the sculptors of the Buddha statues and the ikon painters of Tibet and that the Buddhist images, pictures and objects of art at present produced in Tibet, are worthless compared to the art of former times.<sup>1</sup> The fact that at the present moment the artisans of the Lamaseries (lamas who follow these arts) are far superior to the common craftsmen, does not stand against this view, if it is remembered that Newar artisans were sent to the monasteries so far distant as the interior of Tartary to decorate the great Lamaseries.<sup>2</sup> But the inhospitable and generally bleak nature of the country prevents any definite conclusion being drawn from these facts. It is however evident that the two countries have long been in very intimate contact, and that in the monasteries at least, Newar influence has been largely effective in improving the technique of arts and crafts. The technique of weaving however seems to show that this art did not come from the Tibetan side. While in both countries the actual weaving is invariably done at home, the technique is widely different.

In Nepal, the warp is prepared separately and put in a definite loom frame, although it is very clumsily put together. The warping is performed by sticking a few reeds, about three feet long, in the ground to the length of the proposed web, and the thread is laid on these. After applying a suitable paste with a brush, the web is put in the loom. The different parts of this are not joined together, but merely put under some shed in the house. The treadles are placed in a cavity made in the floor for them. These latter do not consist of footboards moving on a fixed point to be depressed but in their place two buttons hang from the lower margin of the netting, the weaver (always a woman) seizing it between her great and first toe, alternately depressing each foot as the woof thread is delivered by the shuttle. The weaver sits on a bench and plies the shuttle alternately with either hand, pulling forward "the swinging apparatus" to set the woof thread close to its predecessor and pressing the treadles.<sup>3</sup> The loom and accessories described resemble the Indian apparatus very closely.<sup>4</sup>

<sup>1</sup> E. Kawaguchi: *Three years in Tibet*, Madras, 1909. Chap. LXIV.

<sup>2</sup> *Huc: ibid.*

Ahmad Shah: *Four years in Tibet*, Benares 1906, p. 49 et seq.

Ahmad Shah resided a number of years in Ladakh and his information is first hand mainly with respect to this part of Tibet. His statement that the smiths of Tibet have been praised by travellers on account of their skill, does not seem to be supported by the evidence from the reliable sources of information on Tibet. Account must also be taken of recent influences in the part of Tibet where Ahmad Shah resided.

<sup>3</sup> Campbell: *J.A.S.B.*, Vol. 5 (1836), pp. 219-27.

By the term "swinging apparatus" Campbell means some kind of suspended beater-in of the woof, probably a reed, but this is not clear.

<sup>4</sup> Government of Assam: *Monograph on cotton*, Shillong 1885. The actual description is given in the monograph on silk.

The loom used in Tibet, on the other hand is also in use in Mongolia and generally on the border country of northern China. The warp is fastened to the ground by large pegs at either end; the weaver squats over this and pushes the balls of thread through the warp; two or three blows from a heavy wooden batten are given on each thread of the woof, and alternate threads of the woof are kept separated by two small sticks and the batten itself. The part of the warp near the weaver is kept raised to a convenient height from the ground by a piece of wood or stone. In this way, cloths, tents, etc. are woven.<sup>1</sup> Rockhill further mentions that in some parts of the country there is a vertical loom but that so far as he could see there was no material difference in details. He is also definite that in the parts explored by him, there was *no shuttle*, always a ball of thread, and he suggests that the mention of a shuttle of bamboo in Jaeschke (quoted by him) might be due to its presence in Western Tibet.

The description of weaving in Ladakh, given in Moorcroft's travels resembles this closely.<sup>2</sup> The two ends of the warp are fastened together and it is then stretched upon two rods, one fixed to the body of the weaver (who is invariably a woman), by a cord which admits of the work being loosened or tightened at pleasure, and the other well fastened to some stones at a distance. The whole is close to the ground on which the work-woman sits, but the position close to her is slightly raised by a third rod. Loops each including a thread and received upon a small stick like a rattan, supply the place of a heddle. Of these there are three sets which draw up parts of the warp alternately as required. A large heavy mash into which a thin bar of iron is inserted, is a substitute for the reed and three or more heavy strokes are made with its armed edge upon every thread of the woof. The last instrument must be taken out after the insertion of each piece of yarn, and when placed perpendicularly with its two edges separating the warp, abundance of room is given for the passage of the balls of worsted made use of without the cover of a shuttle.

The warp is prepared as in Nepal by winding the thread round reeds stuck in the ground.

It is evident that except for the advanced heddle employed,

Government of Bengal: *Monograph on cotton fabrics*, 1898. N. N. Banerji.

G. A. Grierson: *Behar Peasant Life*, VII Chap. V, Calcutta 1885.

Government of N.W. Province: *Monograph on cotton fabrics*. C. A. Silberrad, 1898.

Government of Bombay: *Monograph on cotton fabrics*. R. E. Enthoven, 1896.

<sup>1</sup> W. W. Rockhill: *Notes on the Ethnology of Tibet*, in *Smithsonian Report*, etc. 1893. p. 698 et seq.

<sup>2</sup> W. Moorcroft: *Travels in the Himalayan Provinces*, etc. London 1841, part II, Chap. IX.

the looms used in the different areas in Tibet agree very closely. Especially important is the absence of the shuttle and the employment of a ball of thread directly. Treadles are also absent and the beater-in is definitely a separate piece, held in the hand, not suspended in a framework. There is no loom frame either and weaving is performed in a squatting position.<sup>1</sup>

It is therefore evident that the loom did not come from Tibet, but probably from the Indian side. The instruments for spinning also seem to have come from India. In Tibet, the spindle consists of a straight wooden rod, with a notch at the end in which the yarn is caught and terminates at the lower end in a flattened clay whorl.<sup>2</sup> In Nepal, an instrument closely resembling the Indian spinning wheel is used.<sup>3</sup> An iron rod is attached by means of a string to a wheel and revolves with it. The spinner sits on the ground turning the wheel by means of a handle with one hand, and with the other drawing out the cotton into thread.

The fact that weaving and spinning are domestic occupations in Nepal suggests that the present technique cannot be a later introduction or modification through outside influence of an earlier different method. The strong conservatism displayed by the Newars in cultivation and also in oil pressing has already been noted. I shall illustrate it from another art, carpentry, in which they excel; they however employ very primitive tools. Planks are cut only with chisel and mallet, and the large saw is unknown.<sup>4</sup> It has therefore to be admitted that the technique of weaving came to Nepal as it is or at least something very similar, which may have evolved into the present apparatus in the country. As regards the spinning wheel it may be said that it is nothing but the ancient distaff combined with a wheel to give it continuous motion. But the knowledge of getting steady motion by a water wheel and its transmission to grinding mills has been known in Nepal and the neighbouring areas for a very long time. The device is said to be employed all over Afghanistan, Persia, and Turkestan.<sup>5</sup> The instrument is called *Kan* by the Newars, but it does not supersede the handmill, which is used almost in every cultivator's house, and is exactly similar to the Indian instrument. It is therefore quite possible that the distaff and the wheel might have been joined together later. It has evidently not,

<sup>1</sup> A fairly good picture of this type of loom, without heddles, is given in Ahmad Shah's "Pictures of Tibetan Life," Benares 1906, Plate 16. The sketch referred to is No. 2. The loom represented in No. 3 on the same plate seems to be a recent innovation, probably from India.

<sup>2</sup> W. W. Rockhill: *ibid*, p. 693.

<sup>3</sup> Campbell: *ibid*, J.A.S.B., 1836.

<sup>4</sup> D. Wright. *Encyclopædia Britannica*, 11th Edition, § Nepal.

<sup>5</sup> Campbell: *Agricultural implements, etc.*, *ibid*.

however, travelled to Tibet; this falls in line with the view of their not having come from Tibet.

The agricultural implements also support the view that the characteristic early culture of Nepal came from the Indian side, although not so definitely as does weaving. In Tibet, although terracing and irrigation are employed, the turning up of the soil is done not with the hoe, but by the Indian plough, drawn by a mixed breed of cattle<sup>1</sup> obtained by crossing a male yak with a cow. It may of course be suggested that in India itself, cultivation is done by the plough and hence no conclusion can be drawn from this fact whether the arts came from the Tibetan side or India. This objection is not quite valid. The Bauddha Newars have in later times been in far more intimate contact with the Tibetans, who are also of the same religion, while there has been undoubtedly some amount of isolation from Brahmanic India and her culture due to the hostility between rival creeds. If the material arts (including agriculture) had been introduced from the Tibetan side, plough cultivation would certainly have spread from that country to Nepal, unless this art was introduced into Tibet itself under certain special circumstances discussed in a later paragraph.

Evidence from another line supports the view that the early culture of Nepal was not derived from Tibet. In the latter country, although agriculture is the principal occupation of the settled population, yet the chief resource of the country is in its pastures and herds. Necessarily butter has come to constitute a very important element of food. It is also used largely in modelling religious figures and other work.<sup>2</sup> In Nepal, as has been noted, neither dairy-work, nor the employment of cattle for labour is common. The list of principal articles of food of the Newars does not contain any mention of butter (this is to be expected from the scarceness of the cattle) and although argument from silence is not generally justified, the fact that workers in history and ethnology, well aware of the ceremonial importance of butter in India and Tibet, have not noted it, allows such a step in this case.

It may however be suggested that, in Tibet, an earlier culture which was like that in Nepal has been obliterated by

<sup>1</sup> S. Turner: An account of an embassy to the court of the Teshoo-Lama in Tibet, London, 1800, p. 51 (properly speaking it is of Bhutan that he speaks there); Dutreuil de Rhins and F. Grenard: *ibid.* p. 366 etc. Ahmad Shah: *Pictures of Tibetan life*, *ibid.* Plate 23 shows a peasant ploughing with two bullocks (?) as in India, and Plate 27 gives the plough and other implements.

W. Moorcroft: *ibid.* Part II, Chap. II.

<sup>2</sup> Tsybikoff, *ibid.*

Dutreuil de Rhins and Grenard, *ibid.*

a later influence. The evidence available does not favour such a hypothesis. It is evident that the introduction of plough cultivation by a powerful outside influence or immigration would render hoe cultivation practically obsolete. But unless the earlier cultured people were actually exterminated as a result of such later influence or immigration, the superior Newar loom would have undoubtedly held its own against the inferior tension loom, nor would the accessory apparatus like the shuttle or spinning wheel have failed to survive. In case of such catastrophic changes in Tibet, the Bauddha Newars would certainly not have been amicably disposed towards the dominant people of Tibet. Evidence from religion, arts and crafts show however that Newar influence has been strongest among the lamas in Tibet, who are recruited from the higher as well as lower classes,<sup>1</sup> although themselves occupying a position above the common people.

Further, in Tibet there is no caste; although there are noblemen and commoners, yet in theory there is no bar to intermarriage between them.<sup>2</sup> It is therefore evident that the population is very homogeneous and it cannot be said that the Newar influence is confined to any particular class of the people who are culturally distinct from the general mass.

§ 7. It has been suggested that the style of building and architecture in Nepal is derived from China and Tibet.<sup>3</sup> While the Chaityas follow the form of the earlier Buddhistic monuments of India, with some modifications, the characteristic examples of Nepalese temples are in a different style, unlike anything found in India proper, except in the far south in the Kanara country.<sup>4</sup> This is the so-called pagoda style of architecture. The characteristics of these temples are that—

- (i) they are built in several stages, each smaller than the one beneath, with
- (ii) sloping roofs and projecting eaves supported by inclined beams;
- (iii) they generally rise, not directly from the ground, but from a square terrace.

The lowest stage is the sanctuary and is covered almost invariably with red tiles. The upper storeys are covered with gilded plates of copper.<sup>5</sup> As has been mentioned, the strong resemblance of these temples to the pagodas of China and Japan,

<sup>1</sup> Except the lowest, the outcastes: Kawaguchi, *ibid.*, Chap. LXIII.

<sup>2</sup> S. C. Das: *Journey to Lhasa and Central Tibet*, Chap. XI.

<sup>3</sup> Hamilton: *ibid.*, pp. 29, 40.

James Fergusson: *History of Indian and Eastern Architecture*. Revised edition, London 1910, Vol. I, pp. 279-80.

Percy Brown: *ibid.*, p. 136, 145 et seq.

<sup>4</sup> Fergusson: *ibid.*, Vol. II, pp. 76-7.

<sup>5</sup> S. Lévi: *ibid.*, Vol. II, p. 10: Hamilton: *ibid.*, p. 40. Very good pictures are given in Lévi's as well as Oldfield's books on Nepal.

in the absence of similar edifices in India proper, has led Hamilton and others to suggest a Chinese origin.

Lévi, however, claims that these pagodas represent a style of religious architecture which has disappeared in India proper. He suggests that although the buildings are recent, not earlier than the 15th century A.D., yet the architecture reproduces without doubt forms of immemorial antiquity and hints that they might be directly evolved from the early wooden architecture of India which preceded and acted as the model of the most ancient stone monuments of the country. Lévi has given some evidence from figures on coins and plates in support of this view. The description of the many-storeyed edifice, with roof of copper tiles, in the Chinese annals, supports this hypothesis to some extent; nothing is however mentioned in the annals in detail about the style of architecture.<sup>1</sup>

To explain the resemblance of the Chinese pagodas and Japanese temples Lévi suggests that the parallels are due to Newar influence. He supports his hypothesis with the facts that

- (i) Newars have largely influenced art in China and this is admitted in the annals,
- (ii) Newar artisans were widely employed in Tibet, Tartary and many parts of China and this continued up to modern times.<sup>2</sup>

Havell has arrived at the same conclusions from a study of early and mediaeval Indian architecture.<sup>3</sup> He suggests that the so-called pagoda style in Nepal is derived from the āsana type of temple architecture in India. The names of the Indian styles are derived from the figure within, in this case seated in a yoga attitude.<sup>4</sup> The simplest form of it is a plain cubical cell with a flat roof or dome. When the artists sought to give importance to the shrine by additional height, they simply raised the roof by putting cube upon cube like a pyramid, and crowned the topmost one with a dome. This Indian style, Havell suggests, was modified in the Himalayan districts (and

<sup>1</sup> S. Lévi: *ibid.*, Vol. II, pp. 10-12.

<sup>2</sup> The evidence on this point has been mentioned when discussing the arts of Tibet and Nepal. The sources are mainly Huc, Tsybikoff and Kawaguchi. Also Lévi: *ibid.*, Vol. III, pp. 185-9 (Appendix). In this Appendix in Lévi's book a very interesting account is given of the influence of the Newars on Chinese and Tibetan art. In 1260 A.D. the Emperor of China had a golden pagoda raised in Tibet. The artisans employed were all obtained from Nepal and worked under a Newar master-builder. This artist, Arniko, later on went to the Chinese court and became the master-builder and statue founder of the Empire. See also Percy Brown: *ibid.*, p. 154 et seq.

<sup>3</sup> E. B. Havell: *The Ancient and Mediaeval Architecture of India*, London, 1915, pp. 120-1.

<sup>4</sup> Rām Rāz: *An Essay on the Architecture of the Hindus*, London, 1834, p. 49.

also the west coast) because of the heavy rainfall. Flat terraced roofs are very inconvenient and they were therefore adapted to the needs of the place, just as in Bengal the local form of thatched house roof and temple dome with convex curvature was adapted for the same purpose. Havell adds that this modified type of temple-building passed to China with the Buddhist religion.

It is interesting to note that all the secular edifices of the Newars as well as the characteristic religious temples are in this style.<sup>1</sup> Also, in spite of Hamilton's adverse criticism, the fact remains that the style appeared strikingly similar to Kirkpatrick to the "wooden mundups" of India.<sup>2</sup> From the pictures given in the different books, it must be said that a one-storeyed building in the Newar style and a modern *mandap* or *āṭhālā* of India differ very little. The discussion of the ancient Indian forms of mandaps and dwelling houses by Havell certainly strengthens this view.<sup>3</sup>

Whether the pagoda style followed the line of evolution suggested by Havell or not, the balance of evidence is in favour of an Indian origin (in the limited sense of earlier existence) of a prototype of the pagoda style. There has of course been interchange of ideas in this, as in other matters, between China and Nepal but the architecture would seem to be essentially Indian. Such a conclusion is in harmony with the hypothesis formulated from the other data that the main elements of the characteristic early culture of the Newars came from India. A preponderance of Chinese architectural style in religious as well as secular buildings of Nepal would have involved considerable alterations of the view put forward.

The materials employed in the buildings also point to connection with India and not Tibet, although the evidence is not conclusive. The Newar houses are generally of brick, the roofs always of tile (burnt in kilns). The latter are flat, oblong pieces with two longitudinal grooves, one above and the other below, which fit into adjacent tiles, and are arranged on the sloping roofs in a somewhat slanting way.<sup>4</sup> The tiles are, according

<sup>1</sup> Hamilton: p. 39 et seq.: see also picture in Kirkpatrick, *ib.* facing p. 180. It may be pointed out that the Gurkhas live mainly in thatched houses of mud-built walls, the chiefs and nobles occupying some of the older Newar palaces. (Hamilton: pp. 209-10.)

<sup>2</sup> Kirkpatrick: *ibid.*, p. 159. The mandaps are used in India for village assemblies, open air schools, etc. They are pillared pavilions of wood or thatch generally.

<sup>3</sup> Havell: *ibid.*, pp. 19-24.

Note: As has been pointed out by the upholders of the Chinese origin theory, the similarity with Chinese buildings is also considerable. Compare the picture of a Newar house given by Kirkpatrick and the two religious buildings given in figs. 28 and 29 of Bushell's (S. W.) "Chinese Art." (London 1909), Chap. III.

<sup>4</sup> Hamilton: *ibid.*, p. 39.

to Mukhopādhyay, very similar to the tiles he dug out at Pataliputra, the ancient capital of the Mauryas. Mukhopādhyay adds: "this system of ancient tiling, which I could not understand in Bihar or Tirhut and is not known in British territory, is still in vogue in Nepal—where I believe the lost arts of India are still living in a precarious way."

It may be added that in Tibet the houses are generally made of stones held together with mud. The roof forms a terrace and consists of a thick coat of well beaten clay on a supporting structure of wood<sup>1</sup>. It should however be remembered that fuel is very scarce in Tibet and even if a people from the Chinese side with the knowledge and habit of tile and brick making passed through to Nepal they would probably be compelled in Tibet to take to other methods of building suited to the country.

§ 8. In the description of the characteristics of the immigrant culture was included "hoe cultivation of a special type" and later, in the discussion of the origin of Matsyendranātha, it was explained as irrigated cultivation. The actual method of agriculture in Nepal is to level the land in terraces, with borders of about a foot high to retain the water brought into the fields from streamlets by irrigation channels or accumulated in the rains.<sup>2</sup> It may be objected that while cultivation may be allowed to have been introduced into Nepal by immigrants, stress cannot be laid on details, and that these might have evolved in the country. The existing facts in different parts of India itself, however, stand against this view. There are a number of rude tribes in different parts of India who grow rice, cotton and other such crops for which the Newars use irrigation in cultivating, yet the method adopted is exceedingly primitive. A suitable hillside or plain covered with forest is chosen; the undergrowth is cleared and the smaller trees are cut down. After these have been dried by the heat of the sun in summer, the jungle is fired. After removing the charred logs and débris, the ashes are left undisturbed until the rains set in when the seeds are sown, or more precisely, small holes are made in the soft earth and a mixture of cotton, rice and vegetable seeds put in. No attempt is made to level the ground or irrigate it.<sup>3</sup> Sometimes, indeed, when occasional

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Purnachandra Mukhopādhyay: *Archæological Survey of India*, Vol. XXVI, Part I, Calcutta, 1901, Chap. III, p. 18.

Many details about the tiles and tile making in Nepal are given in the Report.

<sup>1</sup> Desgodins: *ibid.*, pp. 379-81.

Alexander Cunningham: *Ladak*, pp. 313-14, London, 1845.

<sup>2</sup> Campbell: *ibid.* on *Agricultural and Rural Economy of Nepal*, p. 113 et seq.

<sup>3</sup> Hodgson: *Miscellaneous Essays*, Vol. I (Trübner), "On the Kochh, Bodo and Dhimal Tribes," p. 142 et seq.

Lewin: *Wild Races of South Eastern India* (London, 1870), pp. 31-39.

irrigation is resorted to, as among the Thārus of the Terai, a streamlet is simply dammed up and the fields inundated. No artificial channels are constructed to lead the water under control to the fields.<sup>1</sup> It cannot be said that this mode of cultivation is more paying.<sup>2</sup> The only conclusion that can be drawn is that most of these tribes possess only the barest knowledge of the domestication of plants and that evolution has certainly not brought them to irrigated cultivation in flats or terraces. It is not possible, without detailed analysis, to say how much of even this knowledge is the result of observation of the elementary facts of nature by those tribes, and how much is due to residence in the close neighbourhood of more advanced people. This is however outside the scope of this essay. The facts, in any case, definitely prove that an appreciation of the usefulness of rice, cotton, millet and other crops, even when joined with the knowledge that a good rainfall is necessary for their proper growth and maturing, does not suffice to lead to irrigated cultivation. It must of course be admitted that such an evolution must have taken place somewhere in the world. But the soil of Nepal is quite fertile, even as Assam is, and the large number of rivers and rivulets in the valley as well as fairly regular and abundant rainfall ensures a good crop even by primitive modes. It is therefore scarcely likely that the stimulus to improve cultivation should come in Nepal from the conditions of the country. An evolution of terraced cultivation in Nepal from a primitive mode of agriculture without levelling the land or irrigating it has therefore to be rejected. No great importance, however, need be attached to the actual formation of step-like terraces on hillsides or to the use of stone in the ridges built to retain water in the fields. The principal element is systematic irrigation. As the chief crop of Nepal is rice I shall support this statement by facts from the great rice country of India, Bengal. Throughout this great alluvial plain rice is the most common grain cultivated and of the three main varieties grown the most valuable is Rowā. The other

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H. H. Risley: *Tribes and Castes of Bengal*, Calcutta, 1891. § Mali Mech, Mal Paharia, etc.

E. Stack and C. J. Lyall: *The Mikirs*, London, 1908, p. 11.

A. Playfair: *The Garos*, London, 1909, p. 34.

C. A. Soppitt: *The Kachha Naga tribe*, Shillong, 1885, Chap. II.

Such references can be further multiplied but are superfluous.

<sup>1</sup> Risley: *ibid.* § Thārus.

<sup>2</sup> Lewin indeed suggests, without giving any details, that hillmen earn two rupees by "jhum" cultivation, as this is called, where plainsmen produce only one rupee's profit (*ibid.*). But Hodgson has given (*ibid.*) details of the expenses and income of hill cultivators following jhum, plough cultivators of the plains and the hoe cultivators of Nepal. He concludes that in spite of their hard work the Bodo and Dhimal produce from a half to a third of the plainsmen and about two-thirds of the Newars.

important crop is the Amon which is however grown only in the swampy districts, where the plant has to remain in deep water, often 2-8 feet, for several weeks during its growth. All through the plains, where there are not swamps, Rowā is cultivated in small fields surrounded by a bank 4-12 inches high and often at no period of growth more than 6-12 inches in water. But as the hilly country on the border is reached the cultivation, wherever irrigation is systematically resorted to, is in terraces. From Raj Mahal and Burdwan to Orissa the hills rise gradually and terraced cultivation of Rowā, with definite arrangements for irrigation, is encountered. The banks of the fields are here, as in Bengal, only 6-12 inches high. Similar conditions hold in the Assam valley wherever irrigation is resorted to and the land slopes away gradually. The banks for retaining water in the fields, as well as the channels for irrigation, employed in the plains of Bengal are mudworks; in the hills stone presumably enters into their composition, although not always mentioned.<sup>1</sup>

It has therefore to be admitted that the real characteristic of the cultivation introduced into Nepal by the immigrants was systematic irrigation. This method requires: (i) that the field is level, (ii) that there is a bank round it to retain the water supplied, (iii) that there are irrigation channels, dams, etc., to supply the different fields adequately with water. Given this knowledge, agriculture will assume in a gently rising hilly country the form it has assumed in Nepal, Chota Nagpore, Assam and elsewhere as indicated.

§ 9. The third rank of the Bauddhamārgis have already been mentioned as showing very strongly the influence of another culture, Brahmanism, which has been getting stronger every day in Nepal during the last century and a half, under

<sup>1</sup> C. B. Clarke: *The Cultivation of Rice in Bengal*, pp. 289-91, in the Bulletin of Miscellaneous information, Royal Kew Gardens, London, December, 1898.

S. C. Roy: *The Oraons*, Ranchi, 1915, p. 119 et seq.

*The Mundas*, Calcutta, 1912, p. 388 et seq.

J. Campbell: *A Personal Narrative of thirteen years of service amongst the wild tribes of Khondistan*, London, 1864, Chap. IV.

C. R. Assam: 1911, p. 141 et seq. § Rabha.

J. H. Hutton: *Angami Nagas*, London, 1911, p. 72.

Selections from the Records of the Government of India, § Loochoopa, No. LXXVII, Calcutta, 1870.

The case of the Khasis is somewhat different. They are said to irrigate only the flat bottoms of the valleys but are said to be ignorant of terrace cultivation at the present time. A Jaintia village is however mentioned as having attempted to form terraces with some success. The point requires careful investigation. See J. H. Hutton: *The Sema Nagas*, p. 393, London, 1921.

NOTE.—Professor Radhakamal Mukherji (of the Lucknow University) who recently visited the Khasi Hills informs me that Hutton is not quite correct in his statement about the Khasis. July, 1923.

the Gurkha rule with its discouragement of Buddhism. It however had its influence in Nepal even in early times when Buddhist kings ruled, and must have increased in power under the Hindu Newar kings.

The fact that with the exception of priests, warriors and court officials there are scarcely any other Hindu Newars, suggests that the Śivamārgi group was formed as the result of a political conquest. Tradition narrates that the conquest of Nepal by authentic Brahmanic kings was not at all vigorously opposed, and the fact that shortly after Banrās are found considered as the peers of Brahmans shows that the process was not a bitter struggle like the Gurkha invasion and conquest of Nepal, resulting in the imposition of strict Brahmanic rules and ideas. It seems to have been a gradual growth, the culmination merely finding expression in a definitely Brahmanic rule.

The fact that in the matter of food and drink and also in certain special ceremonies connected with marriage, there is a strong resemblance all through the social organization of the Newars—Bauddha as well as Śaiva—and that the two groups have been on good terms, raising no bars of purity and impurity, while agreeing with the conclusions drawn in the preceding paragraph in addition show definitely that in ordinary social life there were no sharp differences between the two immigrant cultures.

It has already been pointed out that excepting cowherds and blacksmiths there are no other Newar artisans who were, until Gurkha dominance, appreciably influenced by Brahmanic ideas. This indicates that the material culture of the Brahmanic people who influenced Nepal (as discussed above) was not strikingly superior to the earlier culture in Nepal. The fact that the influence of these Brahmanic people was confined chiefly to only a few other groups in only the lowest strata (excluding outcastes) in Bauddha society suggests a similar inference as regards the two civilizations in general.

It may however be objected that there need not have been any actual Brahmanic invasion, merely a cultural influence. It may be suggested that the prestige of Brahmanic civilization has often led royal families of different faith, in outlying portions of India, to enter the fold of that religion, while the general mass of the people have remained faithful to their older beliefs and deities.<sup>1</sup> But, as has been pointed out

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<sup>1</sup> The Koch, Ahom and Meithei have already been cited as examples of conversion. A very good example of conversion of the royal families only but not of the people is furnished by the Jaintia kings. These latter have indeed been so much Hinduised and accepted as such that their descendants marry freely in high class Hindu society in Assam: E. A. Gait: *A history of Assam*, *ibid.*; R. B. Pemberton: *Report on the Eastern Frontier of British India*, p. 219, Calcutta, 1835.

in the section on culture contact, such an evolution is not likely in the case of a people of advanced civilization. The difference in culture between Bauddha Newars and Brahmanic invaders from the plains cannot be considered sufficiently large for such a development. It is of course possible that after Brahmanic rule had existed for some time the influence of the religious and social ideas, especially if not conflicting seriously with the earlier conditions, may have spread to a certain extent. Tradition ascribes the most authoritative code of Hindu castes and customs in Newar society to the activity of a Brahmanic Newar king of native origin. It therefore seems as if the Brahmanic incomers were finally assimilated into Newar society, accompanied by intermarriage with some of the earlier people. Such a view agrees with the known facts of the religious views of the Hindu Newar kings, and is in harmony with the fact that for a good many of the groups considered as having originated from this Brahmanic invasion of Nepal, certain rites are performed by the priests of the older people. I shall now consider some of these groups.

It has been pointed out in the summary of the existing social conditions among the Newars that besides the blacksmiths and cowherds there are four castes which show a more intimate connection with the Brahmanic group than any members of the third grade of Bauddhamārgis. These four all agree in one matter, namely that they are all functionaries for fulfilling religious needs of some kind or other. This suggests a reason why they show greater intimacy with Brahmanic ideas than the sections of the third grade of Bauddhamārgis. It is evident that if there were certain common beliefs in the two cultures and if, due to some amount of intermixture and amicable contact as inferred above, interchange of ideas took place, the people associated with the functions originating from these religious beliefs would come into intimate contact with both people. Such groups would in fact show the influence of both cultures and fulfil their duties for the one division as well as for the other. It is also possible that two similar ideas of the two cultures may become combined and call into existence a special section of the people to fulfil a special need not previously existing.

While all these processes might not develop to an appreciable extent in the case of the important and dominant groups of priests of both cultures the effect will certainly be perceptible in the case of the functionaries of humble position.

Therefore on this view the Kāthā and Nou will have been more intimately connected with both cultures because of the religious and magical importance of the umbilical cord and the ceremonial shavings, and paring of the nails. The Bhāt has similarly been influenced because of the special religious belief about death that finds expression in certain funeral rites.

The case of the Tāti is similar; they do not weave common cloth, but prepare only a special kind of stuff called *ponga*, used in ceremonies of initiation into Buddhism, in funerals, and the worship of Matsyendranātha. The fact that all four castes serve Hindu as well as Bauddha Newars of all grades (except outcastes) supports this explanation of their leanings towards Brahmanism as well as Buddhism.

The case of blacksmiths and cowherds is different; the above line of reasoning does not hold in their case. It is however evident that people who conquer a country must have their own arsenals and munition workers. The chief material for weapons in those days was certainly metal, and evidently of these the best is iron. The Brahmanic invaders would therefore have had a blacksmith group of their own to supply their needs, just as in a later invasion Gurkha smiths came with the warriors. The fact that these iron workers were largely assimilated in Bauddha society may be simply a parallel to what happened to the immigrants in general. One thing may be pointed out here. In the case of castes or groups among these later immigrants, standing somewhat low in their social scale, the tendency to mixture with corresponding groups (i.e., in the social strata roughly corresponding to theirs) would probably be greater the lower down in the social scale they were. For in the absence of hostility, a caste suffering a good deal of social humiliation in the one society would tend to be more receptive to the ideas and practices in the other, if the disabilities were appreciably less in that group. I have thought it necessary to add this note as in the case of the remaining group, the cowherds, the effects of Bauddha influence seem to have been much less appreciable. In the absence of detailed knowledge about these groups, this point cannot however be followed up any further. I shall therefore proceed to the discussion of the cowherds.

It has already been noted that this group has definitely Brahman priests. If however it is admitted that the breeding of cattle and dairy work came to Nepal with a Brahmanic culture, it remains to explain the absence of the employment of cattle in plough cultivation or in any other work, until the Gurkha conquest. Buffaloes were certainly valued for milk and meat but not as beasts of burden or agricultural animals. If the Brahmanic people who introduced the profession of cowherds to Nepal had been practising plough cultivation with cattle in India and in general had been using them for other work, their employment for these purposes would assuredly have come into Nepal during the long centuries of their dominance, at least among the Hindu Newars. But the definitely Hindu Achārs as well as the semi-Hinduised Jyapoos equally use the hoe and not the plough. It has therefore to be concluded that these Brahmanic people at the time they entered Nepal

either were ignorant of, or had a strong prejudice against, the employment of plough cultivation and employment of cattle for other work also in general.

Plough cultivation is not however unknown in Nepal; as a matter of fact it has been gaining ground in recent times. Its restriction to the Parbatiyas and the Brahmins of the Gurkhas definitely points to its introduction in Nepal through comparatively recent influences (not necessarily dating back only to the actual conquest in 1769). It is further evident that this influence is also Brahmanic. We have therefore to conclude that the Brahmanic influence which affected the Newars quite early, finding its definite expression much later under the Hindu Malla Kings, was different in culture from the Brahmanic civilization that affected the Gurkhas, in this point at least. For if the early Brahmanic people had themselves developed (in case of ignorance) this technique of plough cultivation in the plains, or discarded their prejudices of their own accord (which is highly doubtful), it would have crept into Nepal among the Hindu Newars who were certainly in touch with their southern neighbours.

Very wide questions are raised by these inferences about the history of culture in the Indian plains. These however fall outside the scope of this essay and can be dealt with only in an analysis of Indian culture history as a whole.<sup>1</sup>

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The manuscripts were made available through the kindness of Dr. Thomas, the Librarian of the I.O.L., and Dr. Wise's book was kindly lent by Dr. W. Crooke.

APPENDIX A.

There are four different lists of Śivamārgi or Hindu Newars. The earliest, that of Hamilton<sup>1</sup> is given in the form of a description of the castes and the three others in more or less tabular form. These are the lists of Hodgson,<sup>2</sup> Oldfield<sup>3</sup> and

<sup>1</sup> Hamilton : *ibid.* p. 29, et seq.

<sup>2</sup> Manuscript Volume entitled "Ethnography" in the India Office Library.

<sup>3</sup> Oldfield : *ibid.* Chap. XIV (followed by Sylvain Lévi in his book on Nepal) Lévi has merely followed Oldfield in this matter. In a footnote he explains that he had no time to undertake a personal investigation of the caste system during his short stay in Nepal, but that he had supplemented or corrected it to what extent was possible.

See page 238, etc. of Lévi ; *ibid.*

Earle.<sup>1</sup> In the table attached to this appendix, I have arranged the different accounts side by side, as far as possible. Hodgson and Oldfield both mention the division of the Hindu Newars into Brahmans, Ksatriyas and Vaiśyas—the list of Oldfield showing also a fourth, the Śūdras. Earle merely gives tables of high castes, intermediate castes and low castes. I have included for comparison all his high castes; the intermediate castes find their parallel elsewhere.

The Brahmans of the highest class, the Upādhyāyas are mentioned by all of them except Hamilton, who states something contradicting the version of the others. As however the caste of high class Brahmans occurs also in older historical lists (see App. E), the high position of the Brahmans cannot be considered as of very recent origin, i.e. after the Gurkha conquest. As we shall see, the Achārs seem to be the priests of all the minor local deities and the Brahmans restricted to the greater ceremonies. Hamilton's statement would seem to indicate that for all practical purposes the Newar Achārs are the high priests. His account of the castes of Nepal, as a whole, is not very correct and shows that he could not have derived his knowledge from a fairly good acquaintance with the people. As his source of information was not at all good, it is quite likely he overlooked the part played by high class Brahmans in the life of the Newar Hindu.

The two other Brahmanic castes mentioned by Oldfield are not found in any other lists, unless indeed the Karmāchārya and Lawarju are held to be the same. As has been said, Earle does not class the castes under headings of Ksatriya, Vaiśya, etc. It is therefore difficult to say if the Karmāchārya is a Brahman priest or not. In Nepal among Newars the mere fact of being a priest evidently does not constitute any claim to being a Brahman. The word Karmacharj, which is the same as the more Sanskrit form of Earle, however, occurs in the list given by Hodgson, said to be derived from the old rules of Jayasthiti Malla (see App. E); the functions performed by them are similar to those of Achārs and they seem to be the same people. I am therefore inclined to consider Earle's Karmāchārya as only a particular section of Achārs, with a more dignified Sanskrit name. The Lawarju of Oldfield may or may not exist; it may be that certain of the Brahmans who are gurus to lower classes enjoy a lesser degree of sanctity, as is paralleled in the plains of India. The point is not however important.

The caste Bhaju also does not occur anywhere else; a caste of Baidya or Dhanwantar is however mentioned by Hodgson

<sup>1</sup> Census of India 1901, Bengal, Part I, p. 454, etc. Mr. Gait the writer of the report explains that he expunged Buddhist castes from the list.

in his historical list mentioned above, and their functions are exactly the same—to give merely last unction at the extreme, but not medicine. At the present time however no such caste of physicians exists. From the nature of the function of this caste—the performance of religious duty—it would seem as if the Bhajus are merely a section of Brahmans who have become somewhat differentiated by taking up an occupation which a high class Upādhyāya—if he has ideas similar to the Brahmans of the plains—considers to be beneath his dignity. Their absence from Hodgson's account of the conditions in Nepal at his time, coupled with his mention of the Brahmans as professing to practise as physicians, seems to indicate that the differentiation must have been very slight.

Another possibility may just be pointed out. The Achār and Gaoku Achār have functions similar to those of the Bhaju and Lawarju of Oldfield, and in addition are very like a class of inferior Brahmans in other ways. If a foreigner were to collect information from people of these castes, it is possible that on the strength of their evidence he might class them as an inferior class of Brahmans. This is however a mere suggestion and the general correctness of Oldfield's list stands in the way of such a view.

Of the three Kṣatriya castes mentioned by Oldfield, two occur in Earle's and only one in Hamilton's list. Hodgson gives two of these as main castes, and the third as a division—not a subcaste—of Śreṣṭhas.

The Thacur or Malla, variously spelt in the lists, may be accepted as ranking with Kṣatriyas, although no question of origin is raised thereby. They are known to have been the rulers of Nepal before the Gurkhas and ranked as Kṣatriyas.

The Śreṣṭhas are not mentioned by Hodgson or Earle as Kṣatriyas, but merely as a pure caste of high rank. As they were the warriors in the time of the Hindu Newar rulers, before the Gurkha Conquest, they may be included under this head. The footnote to the Census Report containing Earle's list makes their rank as Kṣatriyas fairly clear. It may be noted in passing that the traditional origin of Śreṣṭhas given by Hodgson agrees in substance with the account given in the Census Report and finds an extremely good parallel in the origin of the Khas, the military Gurkha tribe, formed of the offspring of Brahman (and Rajput) fathers and Parbatiya mothers. These tribes have the rank of Kṣatriyas.<sup>1</sup>

In the table at the end of the appendix, I have given

<sup>1</sup> Hodgson: *Essays on Languages, etc.*, Part II., p. 37—

Strictly speaking, Khetris, i.e. offspring of Kṣatriyas by women of lower castes, and the Kṣatriyas, are different; and Śreṣṭhas rank as Khetris. But in practice the Khas, the parallel of Śreṣṭhas, rank as Kṣatriyas, although beneath an admittedly pure Rajput.

only a few of the divisions of the Śreṣṭhas mentioned by Hodgson. Some of these are mere subdivisions, but the majority of them seem to be true sub-castes, differentiated by descent, and to some extent, by occupation. Generally speaking, however, this second point is not important. The reason for giving only the few divisions finding their parallel in the lists of other authorities is that there is no special peculiarity about most of the remaining divisions. Cultivation, trade, porter's work and similar general occupations are followed by them. There are also mentioned an Achārya, a Joshi and a Vaidya or physician group among them. While it will be easy to speculate about them, it is safer not to discuss these sub-castes until further information is forthcoming about them.

About the occupation of Śreṣṭhas Oldfield has merely mentioned that they act as sepoys. Hamilton as well as Hodgson however agree that the members of this caste follow various occupations, some of which are more dignified than others. I am inclined to think that in this case, as well as in the case of the Mallas, Oldfield has put down the traditional occupation rather than the actual profession followed at the present time. Under the rule of the Gurkhas who treat the Newars more as a homogeneous nation, than a group of various castes and other subdivisions, traditional views, customs and differences are breaking up.

The Nikhu of Oldfield are evidently the same as the Nikojoo of Hodgson. The details given about their functions leave no doubt of it. As in the case of many other Śreṣṭha divisions, they are partly Hindu and partly Baudhdha in their manners and customs. They are said by Oldfield to have formerly been Buddhists, and converted to Hinduism in recent times. The functions they used to perform formerly at Matsyendrayātrā are still done by them, although with certain restrictions.

Of the Vaiśyas mentioned by Oldfield, the Achār are found in all the other lists. It is true that Earle mentions Karmāchārya, not Achār, but as we have seen, they seem to be merely a section of Achārs with a special name for somewhat restricted functions. Hamilton's statement about Achārs has already been discussed. Here it is sufficient to add that Lévi in his comment on Āchāryas, in his historical list, mentions that they are the Brahmans of the Hinduised Newars. Hodgson and Oldfield however both agree that they rank as Vaiśyas,<sup>1</sup> and Lévi has accepted Oldfield's classification. So, whatever their functions may be, the Achārs definitely rank or are classed as, Vaiśyas in Nepal.

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<sup>1</sup> Hodgson however adds, after classing Achārs and Joshis as Vaiśyas, that they are regarded more as Śreṣṭhas. The true Vaiśya according to him are the Thacoju, for whom see later on.

I have placed the Jausis of Hamilton along with the Joshi or Jotshi of the others as Lévi definitely mentions that the latter are the same as Jaisis described by him when discussing the historical list. These Jaisis are however the same as Hamilton's Jausis. Neither Hodgson, nor Oldfield anywhere treat of these Jaisis, who are according to Lévi's as well as Hamilton's account quite an important group. It is hardly likely that they could have been overlooked by both of these good observers. With the exception of Earle, they all assign priestly functions to this group, and the exception is merely apparent. It merely adds another detail to the description.

I may seem to have taken much trouble to prove that all the four authorities are describing the same group under slightly different names, when similarity of names might be considered as sufficient; but the name Jaisi is so freely applied in Nepal to quite different groups that in this case at least, definite agreement in all details is necessary before identity of caste can be inferred.

The Bhanni of Oldfield are evidently the same as the Bhanil or Bhanni of Hodgson's Śrestha group. The identity of name and the connection of both with the Taleju temple leave no room for doubt.

In this case as well as that of the Nikojoo, I am following Hodgson as the better observer of the two and also as having a more intimate knowledge of Nepal and the Nepalese. The fact that Nikojos and Śresthas intermarry and eat together shows that they are sections of the same caste or sub-caste. Consequently Oldfield's classification of Nikhus as Ksatriyas is not a mistake, although superfluous. In the case of the Bhanni, the fact that they are cooks and stewards of the Taleju temple, where the priests are Vaiśyas might have led Oldfield to classifying them with Joshis and Achārs, on account of the fact that in Indian temples the cooks are generally of the same caste as the priests, although they might belong to different sub-castes. Further, according to Hodgson, the line between Vaiśyas like Joshi and Achār, and Śresthas is not quite sharp. Consequently such a classification of the Bhanni is hardly an error.

The Gaoku or Gulcul Achār of Oldfield and Lévi are not mentioned by Hodgson, but Hamilton's description of them clearly agrees with that of Oldfield. Unless indeed Oldfield merely borrowed it from Hamilton, this assures the authenticity of the description. The presence of greater details in Oldfield's description shows that he must have obtained fresh information about the caste; consequently the caste must have existed in his time and the two accounts are therefore of value as independent sources. The absence of the caste from Hodgson's list is not a serious difficulty. In the case of the Vaiśyas, Hodgson's descriptions are not so clear as elsewhere, and he

seems to be definitely inaccurate about one caste. The Thacoju group of Vaiśyas mentioned by him are evidently the descendants of the Vais or Vaiśya Thakuris of Nepal. Their rank was however of Kṣatriyas.<sup>1</sup> Hodgson's confusion of these Thakuris with Vaiśyas, is probably due to the fact that trade is followed by them as an occupation, instead of fighting, which is their proper profession, while the first part of their name Vaiśya Thakuri is that of the third caste of the Brahmanic Śāstras, whose hereditary work is agriculture and trade. The absence of this group from any other list must in view of the above fact, lead to the rejection of Hodgson's statement on this point.

It has already been said that the absence of the Gulcul Achār from Hodgson's list is not a serious difficulty. One fact may however be mentioned in this connection. In Hodgson's description of the Jyapoo sections, there is a Ghukoo sub-division, who follow the same occupation as the Gaukaus, described by Oldfield, among the heterodox Buddhists (App. D), and the two groups are evidently one and the same. Hodgson has however mentioned that the Ghukoos are, in addition, burners of the dead of Banrās, Udas and Jyapoos. It seems to suggest some connection between the Gulcul Achārs or Gaoku Achārs, and the Gaokus. The former are however Hindus and the latter mixed Buddhists, and in the absence of further information, it is best to agree with Oldfield and Hodgson that the Gaokaus are members of the third group of Bauddhamārgis, not connected with the Hindu Achārs.

The Tiniacha of Earle are simply described as priests officiating at death ceremonies. They are evidently not the counterpart of those Brahmans of the plains who take death gifts, as these form a separate class in Nepal, the Bhāt; they are mentioned by Earle among his intermediate castes. Officiating at death ceremonies may mean either at the actual funeral ceremonies or some such functions as that performed by the Gaoku Achār. In the former case, they would scarcely be ranked among *high* castes (in Earle's list). This is of course said from the experience of the position of castes in the plains; but the purity and impurity of castes among Hindu Newars does not show any marked divergence from that in the plains, except in the greater simplicity of its character. I am therefore inclined to consider the Tiniacha as probably the same as Gulcul Achār, and not a separate caste.

The Sūdras of Oldfield are all domestic servants of different kinds. They are not however mentioned by the others, except the Bagho Shashu, who seem to be the same as Bagho Srisht of Hodgson. "Sheashu" does not differ much

<sup>1</sup> S. Lévi: *ibid.*, pp. 154-5. D. Wright: *ibid.*, Chap. III.

from Shashu, and it is a known variant of Srisht or Śreṣṭha. It will be remembered that their name signifies only "half a Śreṣṭha" and that although their water can be taken, Hodgson makes it clear that the other Śreṣṭhas do not take cooked food from them. This agrees with Oldfield's statement. As domestic servants must exist and be of pure caste, such a group as the Śūdras of Oldfield, must be in existence in Nepal as it is elsewhere in India, wherever the idea of purity and impurity of caste holds its sway. Such a caste or group of castes, serving the three other varṇas is from the definition given in the Śāstras, considered as Śūdra. Hence Oldfield's classification of this group need not be questioned, although not corroborated by any other authority.

The Jyapoo of Earle are discussed elsewhere, as they belong more properly to the group of Bauddhamārgis than Śaivas (See App. D).

OLDFIELD'S ACCOUNT.		HODGSON'S ACCOUNT.		EARLE'S ACCOUNT.		HAMILTON'S ACCOUNT.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
Upadhyāya	Brahmans; priests of the highest castes	Upādhyāya or Juju, or Devabhaju or Sivamārgi Devabrahmana.	Brahmans, performing the religious sacrifices and rites of the Kṣatriyas, Vaiśyas and Sivamārgi Śreṣṭhas. They also profess to be astrologers and physicians.	Devabhaju	Brahman and spiritual teacher.	..	They do not employ Brahmans as priests. See below under Achār.
Lavariju ..	Brahmans and priests but inferior to Upadhyāyas. They act as gurus to the lower classes.	..	..	..	..	..	..
Bhaju ..	Brahmans; in case of sickness they give spiritual, but never medical, advice.	..	..	..	..	..	..
Thakur or Malla.	Kṣatriyas of the original royal caste, i.e. the Newar kings. Some are now soldiers in the Gurkha army, but do not enter trade or private service.	Thakor, also called Laya-yeju, Thacuri, or Kuwar.	Kṣatriyas, formerly rulers of the country but are now traders, shop-keepers, etc.	Sūryavaṇśī Mull.	Royal family of the Newars.	..	..

Nikhu ..	Kṣatriyas; they were formerly Buddhists and had to paint the figure, etc. of Matsyendranātha, bathe him and perform other similar functions at the Matsyendra Yātrā. They do this even now, although with certain restrictions.	Sriṣht, Sreṣṭha or Bharo.	This caste includes under it some subdivisions and subcastes, which are Varāna Sankara, i.e. of mixed descent. There are fourteen of these, including the Sriṣht Proper. The origin of these is ascribed to various unions of Brahman, Kṣatriya, Vaiśya, with their own as well as other women, and their inter-crossings. Some can wear the thread, others not. Generally they are cultivators and traders.	Śreṣṭha ..	Ministers and other officials. According to a footnote, at the present time the off-spring of Brahmins and low caste women among the Nodwars, except the Kami and Damai, are called Khatri and rank with the Śreṣṭhas.	They form a small caste ranking below Achārs and Jaisia, who can however act as cooks to all Newars, Achārs and Bangras excepted. The Buddhists and Śivaites of this caste eat together, but a woman for her first paramour (Hamilton thus describes their marriage) always chooses a person of her own persuasion. The highest rank, the Siras, are mostly traders. A lower class, the Sual, act as porters, while a still lower, the Bagul, are agriculturists. All however eat together and can intermarry.
Sheashu, Sherista.	Kṣatriyas, these two classes intermarry and eat together. They act as sepoy.	Subcastes of Śreṣṭha: The Sriṣht Proper.	Some of these groups are described in detail as they correspond to Oldfield's groups. These are: Cultivators, artisans and traders. Some worship Śiva, others Buddha. Priests are Brahmins, Banras and Achars. They do not marry or eat with any other group of this caste except the Nikojoo.			
		Nikojoo ..	They are agriculturists, traders, etc., and rank last among the Śreṣṭhas. In			

OLDFIELD'S ACCOUNT.		HODGSON'S ACCOUNT.		EARLE'S ACCOUNT.		HAMILTON'S ACCOUNT.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
			<p>addition to trade, etc., they paint the images of the deities such as Montee Lokeshwar, Jatadharee Lokeshwar, etc., and wash them with panchāmrita, a mixture of milk, sour milk, ghee, honey and sugar.</p> <p>They have Banrās as well as Brahmans for guru and purohit.</p>				
		Bago-Srisht	<p>Means half-Srisht. They are cultivators, traders, etc. None of the Sreṣṭhas take cooked food from them, although they accept it from the others. Chidā and water are however taken from them.</p>				
		B h a n i or Bhanil.	<p>Literally means a steward. Their ancestor is said to have come with Harisimha Deva as steward of the</p>				

Josi ..	Vaiśyas; although not Brahmans it is their duty to expound the Śāstras. They however do not act as priests.	Jotshi ..	Vaiśyas; they wear the sacred thread	Temple of Taleju. They are still in that office. Brahmans and Banrās are priests. In most cases Brahmans perform the auspicious rites and Banrās the funeral rites.	Joshi ..	Astrologer.	Jausi ..	They are descended of a Brahman father and Newar mother, and are the only caste that ought to practise medicine. If their mother had been a Bangra or Achār, they wear the thread and act as priests and instructors to other Jausis
Achār ..	Vaiśyas; they are priests of the Taleju temples of Kathmandu and Bhaktgaon. They are not <i>Brahmans</i> .	Achār ..	Vaiśyas; they wear the sacred thread	Vaiśyas; they are at present tradesmen and shop-keepers. They are said to be descended from the ancient Vaiśya kings of Nepal.	Karmachār-ya.	Officiating priest.	Achār ..	They wear the sacred thread and are considered as the highest caste. They are the priests in the temples of Śiva and Sakti, but do not kill the animals offered themselves.
Bhanni ..	Vaiśyas; cooks of the gods of the Taleju temples.							

† It is not clear about Nikojoo.

OLDFIELD'S ACCOUNT.		HODGSON'S ACCOUNT.		EARLE'S ACCOUNT.		HAMILTON'S ACCOUNT.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
Gaoku or Gulcul Achār.	Vaiśyas; priests for small temples only; they superintend at such temples, the rites connected with death. They have nothing to do with the actual funeral ceremonies, but merely remove the sins of the dead.		Of the three. Vaiśya castes all of whom wear the sacred thread, the Thacoju are the purest and the two others are more Srisht than Vaiśyas. There is in addition another less pure section of Vaiśyas who do not wear the thread.	Tiniacha ..	Priest officiating at death ceremonies.	Gulcul Achār.	These are Achārs of inferior rank, who cannot intermarry with the superior Achārs. Some of them perform the ceremony necessary to free from sin the souls of those who have died on certain unfortunate days.
Mukhi ..	Śūdra, ordinary cook and table attendant.	..	..	Japu ..	Cultivators.	..	Poor Achārs cultivate with their own hand using the hoe. Their women spin and weave, this being the only point in which they seem to differ from Brahmans.
Lakhipar ..	Śūdra, of inferior rank. All the preceding classes of Hindus eat from their hand.	..	..	..	..	..	..
Bagho Shahu.	Domestic servants; they can do all other work except cooking.	..	..	..	..	..	..

## APPENDIX B.

The Bandyas, or Banrās, were formerly celibate monks. In his essays<sup>1</sup> Hodgson mentions that according to early Buddhist literature, the Bandyas were divided into four classes, the Arhan, Bhikshu, Śrāvaka and Chailaka, all ascetics, differentiated only by different degrees of austerities practised and holiness attained. In later literature a fifth division, the Vajra Āchārya, is mentioned who is a family man. Hodgson's informant, a Gubhaju admitted that this division was of later origin. According to him there are two orders of Banrās, the recluse Bhikshu and the married worldly Vajra Āchārya.<sup>2</sup> The lists given by Hodgson,<sup>3</sup> Oldfield<sup>4</sup> and others however show greater diversity. The information collected from Hodgson, Oldfield and Lévi. Hamilton,<sup>5</sup> and the Census Report for 1901<sup>6</sup> already quoted, has been put in a tabular form for comparison. I have not added Kirkpatrick's erroneous account of Banrās (spelt by him Bhanra) as he himself remarks that owing to insufficient knowledge he does not wish to give an account of Newar castes.<sup>7</sup>

It is evident from the tables that the class distinctions among the Banrās are merely official, following the professions, not constituting any bar on commensality or intermarriage. The accounts given of the different divisions do not however always seem consistent. Thus Hodgson gives a list of four divisions of which two, the Sakya Vansi and Chivarbade, do not occur elsewhere as priest. Later on he himself states that the Vajra Āchārya and Bhikshu or Bhikhu are the only priests. The actual condition seems to be that given by the Gubhaju quoted by Gait. The Gubhaju friend of Hodgson and the informant of Gait both agree that there is a section of celibate recluses, who occupy the highest position, although it is clear that these are few in number. Since both were Banrās and of the practically highest order, the Vajra Āchārya, their information about their own class especially in details which must be common knowledge may be accepted as accurate, although no mention is made in the other lists.

<sup>1</sup> B. H. Hodson : *Essays on the languages, literature and religion of Nepal and Tibet* page 63 et sq. Revised Edition of 1874, Trübner, London.

<sup>2</sup> Hodson : *ibid*, page 51-2.

<sup>3</sup> Hodson : *ibid* footnote page 52 and in his manuscript volume entitled "*Ethnography and topography*" in I.O.L.

<sup>4</sup> Oldfield : *ibid.*, Vol. I Chap. XIV ; I have included Lévi's slight corrections and additions in this column.

<sup>5</sup> Hamilton : *ibid.*, p. 29.

<sup>6</sup> C.R. 1901, Bengal, Part I. The information was furnished by a Gubhaju of Kathmandu who discussed Oldfield's table with Gait.

<sup>7</sup> Kirkpatrick, *ibid.*, pp. 183, 184.

All agree that the Gubhaju or Vajra Āchārya is the highest class of priest, Hodgson's informant in fact making it the sole division of Banrās who are not recluses.

The inferior priests variously called Bhikshu, Bikhu or Bikhut seem to have been confused by some of the writers, due to there being the recluse Bhikshus who are called by the Sanskrit term and the goldsmith and priestly Bikhu (evidently the Newari equivalent) who are family men. The origin of Bikhus, given by the Census Report resembles to a certain extent that given by Oldfield. According to the latter, every Gubhaju before attaining manhood, or in practice before he has become a father, must be initiated into the rank of a Vajra Āchārya. If a child is born before that ceremony is performed, he and his descendants from that day are permanently degraded to the rank of Bhikshus (i.e. Bikhu). It seems to me that this is the same as the account given by the Gubhaju, only with certain differences which have crept in, due to laxity or other reasons.

Of the other classes given, the Barraju or Bandeju (= Śākya Vāṇṣī) seem to have no separate existence. Hamilton gives Barrjesu as a synonym for his Bangras who are evidently the same as Banrās, and Hodgson has given Barreju with Bandeju as equivalent of it and the Gubhaju gives both, mentioning that they constitute merely the Banrās, not a separate class. It may therefore be accepted as having been a mistake on the part of Oldfield and Hodgson. The confusion might have arisen very simply. The list of occupations given by Oldfield, Hamilton and Hodgson as followed by Banrās shows that they are engaged in almost all respectable secular pursuits and many have abandoned their religious profession completely. The Vajra Āchārya and Bikhu differ from them in that they retain their religious functions. Hence it is very probable that this large class of ordinary secular Banrās, although not at all differentiated in social matters from the others, simply return themselves as Banrās, not as Vajra Āchārya or Bikhu. This would very easily lead even a fairly good foreign investigator astray.

There remain only the Chivarbade of Hodgson. In his manuscripts he mentions them as occurring only in Patan, although in the footnote he makes a more general statement that the Banrās are popularly supposed to be divided into the four given classes. However no one else mentions them and he himself makes it clear that, whether the representatives of the former Chailakas or not, they are not priests. He does not definitely mention and does not seem to be sure of what they actually are. One explanation would make them celibates and monks; the other signifies nothing particularly. I do not think they can be identified with the Chivarbharhi of Oldfield, who are said to have taken their occupation at

the request of a King of Patan. As Hodgson definitely mentions Chivabadeju or Chivabade only in this town, it may be that this was due to a confusion of Chivarbharhi Banrās and the scriptural Chailakas. In any case there does not seem to be any evidence of a priestly Chivabadeju Banrā class anywhere in Nepal.

It should be noted that the only definite hereditary secular profession of Banrās seem to be that of gold and silversmiths, although other professions are resorted to even by Gubhajas, who no more than other Banrās, do restrict themselves to priestly duties.

The Bakali Bangras of Hamilton seem to include Bikhus and the secular Banrās who return themselves probably simply as such. As regards the classes of Oldfield, the evidence seems to indicate that except the Gubhaju, Bhikshu or Bikhu and the ordinary secular Bandyas, all are mere professional names.

OLDFIELD'S ACCOUNT.		HAMILTON'S ACCOUNT.		HODGSON'S ACCOUNT.	CENSUS REPORT, 1901.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.	According to the manuscript, the Banrās of Kathmandu and Bhatgaon are divided into three orders, the different terms in Sanskrit and Newari being: Vajra Achārya or in Newari Gubhaju, Sakya Vansa, Sakya Bhikshu or in Newari Gubhaju Bhandeju, and Barreju Bhikshu or in Newari Gubhaju Bikut. In Patan a fourth class, the Chailaka or Chithhabadeju, are said to exist. The Banrās follow different vocations as copper-smiths, stone-workers, and are called Kāsā Lohangkarmi and so on; but these are merely occupational terms and constitute no bar to commensality or intermarriage.	The highest rank among Banrās is that of the Bhikshuk, who is a recluse and celibate. If a Bhikshuk breaks his vows and has a family, his children fall to the rank assigned by Oldfield to Bhikshu. They are then called Bikhu.	
The orthodox Bandyas are divided into nine classes, the duties of which are strictly hereditary:	All nine classes however eat together and intermarry, but not with Udas or others. The difference of rank is merely of an official character.	Bangra or Barrijesu.	They are the heads of the Buddhist Newars and much more numerous than Achārs. They are divided into Gubal Bangras and Bakali Bangras:			Banhrā is derived from the Sanskrit word Bandyā, and the terms Bhandeju or Barhaju are merely synonyms: they do not form a separate class. Nebharbharhi, Gansabharhi, Chiwarbharhi are all terms indicating professions, which may be (and are) followed by any caste and not only by the Banhrās
(1) Gubharju	To this class belong the priests of the highest class, called Vajra Achārya. They are not however limited to priestly duties.	Gubal Bangra.	These are the guru and purohit and when they perform a ceremony, they wear a thread like the Brahmans or Achārs. They do not eat or intermarry with any of inferior rank.			
(2) Barrhaju, (3) Rikhu, (4) Bhikshu, (5) Nebhar.	These four are all gold and silversmiths, making however only ornaments. The Bhikshu have the hereditary profession of gold and silversmith, but many of them exercise a priestly function of an inferior sort.	Bakali Bangra.	They work in gold, silver and copper and engage in trade and cultivation.	In the footnote, Hodgson enumerates four divisions, the Vajra Achārya, Sakya Vansi, Bhikshu or Bikhu, and the Chailaka or Chivabare. The last are said to derive their name from living in a Vihara in which there is a Chaitya, vulgarly called Chiva, in its midst. Alternatively, the name is said to be a corrup-		

(6) Nebharbharhi ..	Workers in brass and tin, making metal images of gods and tinning metal dishes.	tion of Chailaka Bandya Potius, i.e. Bandyas wearing Chivara, a part of the monastic dress, a sense which would make them signify adhering to their monastic vows.
(7) Tankarmi ..	Makers of guns and cannons in iron.	Later on, in his essay, Hodgson adds (pp. 63-64), the superior ministry of religion is in the hands of Vajra Acharyas and the inferior ministry of Bhikshus and these are hereditary. They are the priests of non-Bandyas as well as Bandyas. Those Bandyas who have abandoned the profession of religion follow different secular professions, but this constitutes no bar to inter-marriage or commensality.
(8) Gangsabarhi, (9) Chivarbharhi.	Carpenters, workers in wood, plasterers, etc. According to Lévi, the Bandyas took to carpentry only in the 17th century at the request of Siddhi Narasimha of Patan.	

## APPENDIX C.

Two lists are available of the classes of the Udas, one from Oldfield,<sup>1</sup> another from Hodgson's manuscript.<sup>2</sup> These have been put in a tabular form for comparison. Hamilton does not contribute anything to the subject; he merely mentions that they were originally all traders and states that they rank next to Jopu, but almost of the same rank. The Gubhaju of Kathmandu who criticised Oldfield's table of Bauddha castes in Nepal stated that all the divisions of Udas are merely occupational and that Āwās are usually Jyapoos.

As regards the position of the Udas, Oldfield's order was not objected to by the Gubhaju although he criticised other statements of his. As the real position must have been well known to a Gubhaju, Oldfield's view may be accepted. Hamilton's account is much less full in all respects and as we shall see contains other inaccuracies in addition.

All the authorities are agreed that there are no real differences between the different classes of Udas, i.e. by marriage and the rules of the table. It may therefore be definitely accepted. Again all the principal occupations followed by Udas, and the corresponding professional terms agree in both the lists. It is true Hodgson gives three more classes than Oldfield but the exception is more apparent than real. The three classes are Barahee Kurmee, Kotajoo and Sinha-Khwo. The first, the Barahee Kurmee is similar to the term Balhaij which seems to me a contracted vulgar variant of it; the latter occurs in Oldfield's table of heterodox or mixed Hindu and Bauddha Newars and the specialised occupation ascribed to them (Appendix D) is the same as of the Barahee Kurmee. Hence the two terms are the same. Moreover according to the Gubhaju the Balhaij is the same as Sikami (Appendix D), both being carpenters, only with different names. The reason of the difference in name for the specialised occupation has been given by Hodgson. The group therefore has been placed separate only on account of certain peculiarities connected with the work pertaining to it and constitutes no exception. The other two classes have, on Hodgson's own statement, abandoned their traditional profession in favour of trade and agriculture. In Oldfield's time they must have been still more assimilated to other groups—if we admit that they had been separate—returning themselves perhaps simply as Uda or under some other head.

It is not important whether the Kotajoo or doorkeepers once existed separately or not and the evidence does not allow

<sup>1</sup> Oldfield: *ibid.*, Chap. XIV.

<sup>2</sup> Hodgson: Manuscript volume entitled "*Ethnography*."

any critical investigation. As regards the other group I am inclined to think that Hodgson's information was correct. He was quite a good observer, and a resident in Nepal for years. His statements show very few mistakes, and none of an obvious and glaring kind. When therefore he gives so many details about the Sinha-Khwo, it has to be admitted that the tradition of such a group was still lingering in his time in Nepal, although very naturally it may have died out later.

Only one more point remains, viz. the statement of the Gubhaju that most of the Awals are Jyapoos. Hodgson states that in his time the Uda Awals supplemented tile-making with trade and agriculture; although this is not mentioned by Oldfield. The latter however never gives so much detail as Hodgson. It is not at all improbable that the Udas may have given up tile-making in favour of the more dignified pursuit—at any rate according to the recent Brahmanic influence to which they have submitted—of trade, and the work of tile-making may have passed more or less completely into the hands of the next group of people in Bauddha Newar Society.

HOBSON'S ACCOUNT.		OLDFIELD'S ACCOUNT.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
	The term Uda includes many different people, and although these are looked upon as one and the same caste, and not in any respect different, yet as each of them pursued a particular trade, it was separated from the rest under a name to answer the profession.		The Udas are divided into seven classes, which however eat together and intermarry. They eat from the hands of their superiors the Balrās who however do not reciprocate it. They are orthodox Buddhists ranking above Jyapoos and others but below Banrās. The divisions are:
Barahee Kurnee	..	..	..
Seekurnee or Sikami	..	Sikami	.. Carpenter.
Mudhoekurni	..	Maddikarmi	.. Bakers.
Tamat	..	Thambal	.. Makers of vessels and other articles of general use, of copper, brass and zinc.
Kāsa	..	Kassar	.. Worker in metallic alloys.
Lohang Karmi	..	Lohakarmi	.. Stone mason, making images of god, temples, and also working for private houses.

Sinha-Khwo	..	Formerly red lead makers, now husbandmen, although still returning themselves as Sindurkar.	..	..
Kotajoo	..	Said to have been door-keepers formerly, now cultivators and policemen.	..	..
Awā	..	Brick and tile makers and thatchers of houses. They also add trade and agriculture to it.	Awā	..
Uda Proper	..	These are said to be descended of Banrā father and Jyapoo or Sresth mother.	Uda Proper..	Traders and foreign merchants.

## APPENDIX D.

In addition to the Hindu and Bauddha Newars discussed in the Appendices A, B and C, there remain a large class of mixed Hindu and Bauddhas, including outcastes. Four fairly full lists are available for these. Oldfield<sup>1</sup> describes them under Bauddhamārgi Newars, making it however clear that they are not pure Bauddhas but heterodox as he terms them. Hodgson<sup>2</sup> has attached their description to the list which contains accounts of the Brahmins, Kṣatriyas, Vaiśyas and Udas. In his list the Udas follow the three Hindu varnas and are then followed by Jyapoo and others. Earle's "high" castes have already been discussed (App. A); his "intermediate classes" and outcastes are placed alongside the accounts of Hodgson and Oldfield, although he has stated that they are lists of Hindu castes. Hamilton's list of inferior Bauddha castes and outcastes is also added for comparison.\*

In addition, there is in the Census Report a criticism of Oldfield's table by the Gubhaju mentioned in the preceding appendices. According to him certain of the castes given by Oldfield are Śivamārgi, e.g. Bhāt, Kāthā, Tāti, Kaua and Nau, while Konar and Balhaiji are the same as Sikami. He had never heard of the Tippa, Pulpul, Ballah, Lamu, Dalli, Gaowa and Nanda Gaowah. Further all the eight outcastes are said to be now Sivamārgis.

Before discussing the different lists, I shall add here the estimation of the relative proportion of Bauddhas and Hindus in Nepal. The earliest estimate of Hodgson puts down "the vast majority of the Newar race" as Buddhists of one or other denomination, and the minority as Śaivas or Śāktas.<sup>3</sup> Oldfield estimates that two-thirds of the people are Buddhamārgi, the remaining third being Śivamārgi.<sup>4</sup> According to the Census Report, the proportion of Hindus is from one-third to one half of the total.<sup>5</sup> Further, the Hindus are said to be gaining ground by fresh accessions and also defections from the rank of Bauddhas, which does not happen in the case of the latter. The general impression received from these facts is that the comparatively small minority of Hindus have been steadily gaining ground at the expense of Buddhists under the rule of the Gurkhas. This is quite natural considering that Gurkhas are comparatively strict Hindus, at least with respect to Newar Hindus, and look

<sup>1</sup> Oldfield: *ibid.*, Chap. XIV.

<sup>2</sup> Hodgson: Manuscript volume entitled *Ethnography*.

<sup>3</sup> *Census Report*, 1901, *ibid.*

<sup>4</sup> Hamilton: *ibid.*, p. 33.

<sup>5</sup> Hodgson: *Essays on the languages etc.*, *ibid.*, p. 64.

<sup>6</sup> Oldfield: *ibid.*, Chap. XIV, p. 177.      <sup>7</sup> *C. R.* 1901, *ibid.*: p. 452.

upon the Bauddhas as Anācharaniya, especially their higher classes.<sup>1</sup>

I shall also put down in this connection some general notes on the thirty classes of heterodox or mixed Hindus and Buddhists as given by Oldfield. According to him, those thirty classes, though of inferior status to Banrās and Udas, are yet all "caste" men and from their hands any Hindu may drink water. They are moreover Bauddhas only in name. They worship openly at Hindu temples and at marriages, funerals, etc., they adopt the Hindu ceremonies along with the Bauddha ones employing a Brahman to assist their own Vajra Achārya in the performance of his sacred duties. They are rapidly adopting Hinduism.<sup>2</sup>

I shall now proceed to the discussion of the table. It is evident that Earle's intermediate castes agree remarkably well with the lists of heterodox Buddhists of Oldfield and the Ekthureeahs of Hodgson. This is the reason why this account has been placed beside those of Hodgson and Oldfield, although professedly it deals with Hindu castes. I have not attached importance to this latter aspect of the list of Earle as it was collected in British territories. Away from Nepal, in the absence of Banrās, Buddhists as well as Hindus have to resort to Brahmans and in a more or less strong Hindu surrounding, the tendency will be for all Nepal people to return themselves as Hindus. It is mentioned in the Census Report that even several Udas and Banrās returned themselves as Hindus. Therefore as Earle does not give, and probably had not detailed information about, the priests employed, we may take his caste list as merely a composite one, indicating the various divisions of the Newar people in general. It is regrettable that some Buddhist castes were expunged, or at any rate, as the Census superintendent puts it, all the Buddhist castes were expunged from the table. Their presence would have made the composite character of the list obvious and also allowed an estimation of its completeness. As we shall see later, the elimination has not been thorough, and it would have been better if it had been merely indicated what castes were Buddhists, definitely mentioning why they were so considered.

The following castes<sup>3</sup> are found both in Hodgson's and Oldfield's list and are not adversely criticised by the Gubhaju:—

Jaffu	Chitrakar	Gaukau	Chhippah	Sarmi	Gartho	Pahi
or	or	or	or	or	or	or
Jyapoo	Cheeka	Ghukco	Cheepa	Salmi	Gatha	Pihi.

<sup>1</sup> Haraprasād Śāstrī, in the introduction to N. Vasu's "*Modern Buddhism*", Calcutta (no date). The actual statement is that they are Anācharaniya but as they are not so to Newar Hindus, evidently this applies to Gurkhas.

<sup>2</sup> Oldfield: *ibid.*, Vol. II., p. 147.

<sup>3</sup> The Yungwar are left out for reasons given later.

The occupations given are practically the same, so that these may be accepted as quite correct. Hodgson gives a much larger number of the sections of the Jyapoo than Oldfield, and some of these are found in Oldfield's list as separate divisions.<sup>1</sup> All six of the sections of Jyapoo given by Oldfield are found in Hodgson's list, agreeing in minute details.

Hamilton also describes the Jyapoos although he wrongly places them above Udas. He has further given a division of Jyapoos lower down the list, with a slightly different spelling, Japu, who are potters. Evidently they are the Kumhal section of Jyapoos in the other lists. The Kumha or potters are also mentioned in Earle's list. These are of course the same as the section of Jyapoos considered above. It may be that the section has hardened into a caste in the British territories.

The somewhat higher position accorded to Jyapoos in Earle's list by placing them among high castes (App. A) is borne out by Oldfield and Hodgson's statements and has been exaggerated to the length of placing them above the Udas, by Hamilton.

Only one other caste comes correctly in Hamilton's list, the Got (= Gātha), who follow practically the same profession as in the other lists.

The Kurmi of Hamilton follow the occupation of the Sikami or the carpenter and the Āwā or bricklayers. The latter are mentioned as a section of the Jyapoos in Hodgson's list and occur as a caste in Earle's table. It will be remembered that in connection with the Āwā division of Udas, the Gubbaju remarked they (the Āwās) are mostly Jyapoos. It may be that this section of Jyapoos had hardened into a caste in British territories and been correctly classified as a separate caste by Earle.

The Kurmis of Hamilton are not mentioned as a separate caste in any list except that of Earle's. It is however evident from the description given in the Census Report and also from evidences from other sources<sup>2</sup> that the term Kawmi or Kami is used merely in the sense of artisans. These Newar artisans should not however be confounded with the Gurkha Kamis who are blacksmiths and outcastes.<sup>3</sup>

The castes Chhippah and Salmi are also found in Hamilton's list, but incorrectly placed among the outcastes. The Chhippah are found in all the other three lists among pure castes and Hamilton is therefore obviously in the wrong. About the Salmi there is no mention in Earle's

<sup>1</sup> As intermarriage takes place among these to a limited extent, they cannot be described as subcastes.

<sup>2</sup> Hodgson's *Essays on the Languages, etc.*, part I, page 64.

<sup>3</sup> Lévi: *ibid.*, p. 274; *Census Report 1901*, *ibid.*; Risley, *Tribes and Castes of Bengal*, § Kami.

lists, but they are a well known caste in Nepal, and mentioned in the Census Report of 1901 although not in the Table. It is not possible to say whether Gait's elimination of Buddhist castes is responsible for its absence in the list, or not. Oldfield and Hodgson are agreed upon this point and Hamilton seems to have been in error in this matter as in the case of several other castes. I therefore consider Lévi's suggestion, that the Salmi might have been impure in Hamilton's time, as wrong.<sup>1</sup> Special weight cannot be attached to any statement of Hamilton on points of social status and precedence, without corroboration from other sources.

All the castes that the Gubhaju qualified as having never heard of occur in both Hodgson's and Oldfield's table, and some of them in the other lists too.

The Lamu of Oldfield, who are said to be the same as Duan, are described with similar details under practically the same names, Laemoo or Dooyu. Hamilton gives the same story of their having saved Prithinaraayan's life, and gives them the name Dhui. As they are described originally as hunters and fowlers in general and worshipping both Siva and Buddha, it is evident that they are a more or less wild tribe, who have been included among pure castes through royal favour and have been influenced by the two religions of Nepal in recent times, acquiring from them a heterogeneous belief. It is therefore quite easy for the Gubhaju not to have heard of them.

I am inclined to consider the Duita of Earle, and the Dhauwi of Oldfield, to be also descriptions of the wilder section of this tribe. These two follow the same occupation, which is naturally that of a jungle people generally and the names are not far from the different variants definitely known to belong to this tribe. It is true that the Dhauwi of Oldfield are placed among outcastes, but this is comparatively easy to understand. The fact that the tribesmen or strictly speaking one of the tribesmen did a service to the king, may lead those who come to the court, to comparatively high social status. Those who remain in the wilds remain as they were before—impure—without the privilege that royal favour has conferred upon their brethren at court.

The Ballah are mentioned along with Lamu, in Oldfield's table and may be taken as the same caste of palkibearers, although the name does not occur elsewhere. In any case, a second caste of palkibearers is not mentioned anywhere.

The Dalli are given in Hodgson's description of the Jyapoo as formerly soldiers under the Newar Kings. The details given by Hodgson and his better power of observation and opportunities lead me to accept his version of the Dallis. In this case, it becomes clear why the Gubhaju did not know of them

<sup>1</sup> Lévi: *ibid.*, p. 239.

at all. Only searching investigation can reveal the existence of such sections which had a definitely different occupation formerly, but are now merged in the ordinary Jyapoo.

The Tippa and Pulpul occur in both Hodgson's and Oldfield's list with similar occupations, and the cowherds are mentioned in Hamilton's list also; the names for the latter in the lists of Hodgson and Oldfield agree, but differ from that of Hamilton. The common occupation and description in this particular case, as no other cowherd caste is mentioned by anybody, leaves no room for doubt. It is probably due to the difference in the language from which the term is taken.<sup>1</sup>

The evidence for the existence of all three castes is therefore very strong. I wish to emphasise this specially in the case of cowherds for reasons to be given later on. On these matters the fact that the Gobhaju did not hear of them does not carry much weight. For although importance may be attached to his criticism of anything said about his own class the Banrās, and also to the high caste Udas, his information cannot be very accurate about the far removed low strata of Jyapoo and others, who are moreover from his point of view lax in their religious observances and often transgress the law of Buddha.

Hodgson's list supplies the reasons why the Gubhaju may not have at all heard of these castes. Thus the Tippa or Teepa are described as a subdivision of Khoosā and as selling *palong* (a herb eaten fried or with curry in Bengal also). As the main caste name is different and the occupation not particularly important and the caste necessarily weak numerically, it may have easily been overlooked.

The large amount of detail given about Poolpool make it clear that the profession exists. But it also shows that they follow agriculture and trade at the same time, and that they are restricted only to one town. Although the Gubhaju belonged to this same place, the facts indicate the obvious numerical weakness of the caste and therefore absence of general knowledge about them. The case is parallel to that of many castes, in different parts of India, restricted to small areas, of which the existence has been made known to all only by elaborate ethnographic surveys. It would be rash to say that the average well-informed Brahman priest of any province or division would know all the castes of that area given in a report of the Ethnographic Survey.

Further, as these people discussed above, used to follow other more respectable, and probably more lucrative occupations it is quite possible that in the course of three quarters of a century they have given up the work altogether, taking

<sup>1</sup> E.g. the terms Gnai, Kassai, and Mamsavikri, used for the butchers and meat-sellers, taken from Newari, Hindi and Sanskrit respectively.

advantage of the general laxity that has set in, in their social organisation under Gurkha rule.

The case of the cowherds is different. Hodgson mentions definitely that they have for *guru* and *purohit*, Brahmans.<sup>1</sup> The occupation occurs also in the lists of the caste in the time of Jayasthiti Malla, given by Lévi and Hodgson, and the latter again mentions them as having Brahman priests. This is all the more striking as most other castes are described by Hodgsons in the list as having Gubha priests. Hodgson's account of their origin (traditional) agrees with these facts and with the actual state of affairs about employment and use of cattle in Nepal.

Cattle do not seem to be bred or used in any way by Newaris, and only a few are kept by the better classes, presumably Gurkhas. The numerous Brahmini bulls set free to graze at liberty, by pious Hindus, are imported from the plains. In the cultivation of land, the Newaris always use the digging hoe, the Kodālie,<sup>2</sup> but not the plough. This cannot be said to be due to the nature of the ground,<sup>3</sup> for the fields often allow of it. In the centre of the valley, there are often dead flats or terraces, varying from an acre or an acre and a half to, it is true, four or five feet in length and breadth. But the Parbatiyas (Magars and Gurungs) who occupy the confines of the valley and cultivate the lands there on the declivities of the mountain base, and therefore on areas less favourable for the use of the plough than the central portions, (which are almost wholly cultivated by Newars), yet use the plough partially. The Murmis cultivate the hillsides, generally facing the valley, and use the plough, though not often, as their locations are much too steep for it.<sup>4</sup>

<sup>1</sup> The Banrās are said to perform the funeral rites for them, as for the Śreṣṭhas and others. This point will be discussed later.

<sup>2</sup> The best authority about agriculture, etc., of Nepal is Campbell. See his paper on "The Agricultural and Rural Economy of the Valley of Nepal," *Transactions of the Agricultural and Horticultural Society of India*, Vol. IV, 1897. (Published in Serampore, catalogued in the British Museum under Calcutta), pp. 73, 114, 155.

Also Kirkpatrick: *ibid.*, p. 100.

O' Cavanagh: *ibid.*, Chap. 111.

S. Lévi: *ibid.*, p. 306, but his information is acknowledged by him to be derived chiefly from Campbell.

Elwes: *ibid.*, p. 358.

<sup>3</sup> Suggested by O' Cavanagh: *ibid.*, Chap. II.

<sup>4</sup> Campbell: On agriculture, etc., *ibid.*, p. 155.

Elwes in his article on Nepal quoted before also remarks that cattle are not used in the Nepal valley although it is done (for cultivation) in other parts of the world on steep hillsides, as for example in Formosa. He remarks that buffaloes are valued only for meat and milk.

Examples of the use of the cattle-drawn plough on terraced fields in valleys are found in the neighbouring countries of Ladakh, Tibet and Bhutan.

The point is settled by the fact that "of late years the plough is being more extensively used."<sup>1</sup>

It cannot be said that the non-employment of cattle has risen out of the respect for the cow or buffalo; for the Newars eat buffalo meat while the Hindu Parbatiyas and Brahmaus who certainly venerate the cow do not hesitate to use cattle for ploughing the fields.

The only conclusion that can be drawn is that this failure to use the cattle-drawn plough for cultivation was originally due to ignorance of the process and subsequently kept out by strong conservatism and probably also some hostility to the people in contact who possessed the necessary knowledge.

The former ignorance of the Newaris in the matter of plough cultivation is well brought out by the evidence from Chinese historical documents (Appendix E), which definitely state that the people of Nepal did not know how to cultivate fields with the help of cattle, although at the time they were expert metal and woodworkers and otherwise highly cultured.

The strong conservatism of the Newars in the matter of employment of cattle in any work is very well shown in other matters. Thus cattle are not (i.e. at the time when the account of Campbell was written) employed as beasts of burden. Campbell considers that the uneven surface of the country is scarcely sufficient to excuse their employing man as the only animal of burden. He points out that the rulers of the country drive English carriages, while the transport of every article in their dominion is made on the backs of men and women.<sup>2</sup>

Finally, in Nepal, cattle are not used in driving oilmills as in India, a cruder type being worked by human labour. The cattle driven mill is almost universally used in India<sup>3</sup> and the

See W. Moorcroft: *Travels in the Himalayan Provinces, etc.*, London, 1841, Part II, Chap. II.

Ahmad Shah: *Pictures of Tibetan Life*, Benares, 1906. Plate 23 gives the picture of plough and cattle.

L. de Milloué: *Bod Yowl*, Paris, 1906, Chap. IV. Annales du Musée Guimet.

<sup>1</sup> D. Wright: *ibid.*, p. 46.

<sup>2</sup> Campbell: *ibid.*, p. 166. Oldfield however differs from this view. *Ibid.*, Vol. I, p. 98-9. The reasons assigned by him are not however sufficient for the universal non-employment of cattle in the country for this kind of work.

<sup>3</sup> G. A. Grierson: *Behar Peasant Life*, VII, Chap. I, Calcutta 1885.

H. Risley: *Tribes and Castes of Bengal*, § Teli.

W. Crooke: *Tribes and Castes of N. W. Provinces*, § Teli.

Russell: *Tribes and Castes of Central Provinces*, § Teli.

W. Hoey: *Monograph on Trade and Manufactures in N. India*, p. 191, et seq. Lucknow 1880.

E. Thurston: *Tribes and castes of S. India*, § Ganiga.

The exceptions are in Bengal and Assam.

fact that it has not yet penetrated to Nepal is significant. I have given these two striking facts in favour of the conclusion arrived at about the knowledge of the Newars of handling cattle for work, and also as illustrating how tenaciously they have kept out even very useful and simple devices which did not happen to have been known earlier. The full significance of this particular point has been discussed in the main body of this essay.

Returning now to the cowherds, the evidence of their existence in Nepal in historical times is undoubted. The occurrence of this caste in the lists of Jayasthiti Malla's code shows that they had a recognised status at that period, and therefore must have been in Nepal a fairly long time, to be so assimilated into the society. Brahmans from India are known to have dwelt in Nepal when Chinese pilgrims visited India in the seventh century A.D.<sup>1</sup> and cattle breeding must have been known at least to those who came under their influence although the animals were not employed in any kind of work. The tradition of cowherd kings and Ahir (also cowherds) invasions of Nepal<sup>2</sup> point to the knowledge of this art in far earlier times.

It is however evident, that the cowherd caste is necessarily small numerically in the Nepal valley; further being Hindus, they escaped the observation of the Gubhaju.

I do not see any reason for disagreeing with the opinion of the Gubhaju that the Konar and Balhajj are the same as Sikami, i.e. ordinary carpenters. The somewhat specialised occupation followed has merely given rise to different professional names and sections. One of the cases (Balhajj) has been discussed under Udas (App. C) and the arguments and facts put forward there support this view.

When the parallel castes occurring in Hodgson's and Oldfield's list were given earlier (those not objected to by the Gubhaju), the Yungwar were left out. This was done as they were probably the same as the Sikami also. It is true that

See J. Wise: *Notes on Races, Castes and Trades of Eastern Bengal*, pp. 390, London 1883 (not published).

F. Buchanan Hamilton: *Eastern India*, Vol. III, pp. 676-9.

In Assam a device similar to that used in Nepal is employed and employment of cattle is in general rare among the non-Hinduised Hill tribes. The process employed by highcaste oilmen in Bengal in former times was however quite different, being "rendering" not "extraction."  
§ Oil. *Encycl. Br.*

<sup>1</sup> S. Lévi: Vol. I, pp. 154-5.

S. Julien: *Mémoires sur les contrées occidentales par Hiouen Tshang*, Paris 1857, 1857, Vol. I. pp. 407-8.

Lévi has shown in this connection that Hiuen Tshang did not personally visit Nepal as Julien thought. See, however, T. Watters, "On Yuan Chwang's Travels in India," London 1905. Vol. II, pp. 83-5.

<sup>2</sup> S. Lévi: *ibid.*, Vol. II, pp. 72-74, etc.

D. Wright: *Chap. II.*

the Gubhaju did not mention this, although he remarked on the Balhaij. But the latter are carpenters connected with the car of Matsyendranātha; so are the Yungwar. If the Balhaij or Barahi Kurmee (see App. C) are the same as Sikami, the Yungwars are probably also the same. Of course there may be a special section of carpenters who build the car of Matsyendranātha, but the evidence does not seem to lie in favour of their having split off into a division resembling a subcaste.

All the five castes described as Sivamārgi by the Gubhaju, occur in the three important lists, of Hodgson, Oldfield and Earle. The spelling and occupation of the Kāthā are given somewhat differently in Oldfield but the Census Report makes their identification quite clear. Hamilton mentions only the Nau, and later on amongst the outcastes, the Kau. As however all the other lists disagree with Hamilton's, this piece of information may be considered incorrect.

Although the occurrence of the five castes in Earle's list might seem at first sight to support the view of the Gubhaju, it has already been pointed out why this is not at all a good ground for concluding that a particular caste belongs to Hindu Newars.

About the Bhāt, some further information is available. In a description of the funeral ceremonies of the Newar Kṣatriyas, Hodgson<sup>1</sup> mentions that on the eleventh day after the cremation, a piece of the brain of the dead man (kept separate before the cremation) is eaten by the Bhāt Brahmans. Other castes, as Brahmans, Vaiśyas and Śreṣṭhas are mentioned as merely making gifts of eatables, metal utensils and wearing apparel to these people, which also is done by the Kṣatriyas. The making of death gifts to Bhāts is not however restricted to Hindu Newars alone. While, therefore, it cannot be suggested that high caste Hindu Newars make death gifts to acknowledged Bauddhas, the Bhāt cannot be considered as a pure Hindu either. The mention of Banrā priests by Hodgson and Oldfield's inclusion of the group among Bauddhamārgis show that they must be a mixed group.

The Tatee are mentioned by Hodgson not to be wholly Bauddhas; some according to him, have Achārs and Brahmans as priests. The mention of two groups of Tatis in the historical list, one of which weaves graveclothes and is Bauddha, while the other makes clothes for idols, and also sacred threads, presumably for the castes of twice born rank, including Brahmans who act as their gurus, fits in with this statement.

The Nau, similarly, are mentioned by Hodgson as worshipping both Bauddha as well as Śaiva deities; this special mention in their case shows that the barbers had been more influenced by the Brahmanic ideas than the other members of the

<sup>1</sup> Manuscript entitled "*Ethnography*."

third group. No such statements however occur about the two others castes.

As both Hodgson and Oldfield claim Bauddha connection for these five castes and the Gubhaju definitely states they are Sivamārgis, and as Brahmanic influence has been gaining ground rapidly in the interval (of over half a century) the sharpness of the differences in the several accounts may be set down to this last process during the intervening period. At the present time, all the members of the third group have come largely under the influence of Brahmans, employing them jointly with Bandyas, in their ceremonies. If therefore, at the beginning of Gurkha dominance certain sections of the third group were partially Brahmanic in their ideas and customs, they would tend to be far more Hinduised when the other more orthodox sections were only partly influenced. It seems to me that something like this happened in the case of the above five castes. For three of them, there is definite evidence from Hodgson that they were partly Brahmanic, even before Gurkha influence had been felt a long time. I merely suggest that it was so for the two other castes also. It has indeed been said before that the Gubhaju's evidence about the heterodox Buddhists is not so strong as for the two orthodox grades. That was, however, in connection with his ignorance of certain castes or sections. As he belonged to the priestly grade of highest rank, a definite statement from him whether a certain caste belongs to his or to the hostile religion, cannot come under the same criticism. In this matter, his evidence has undoubted weight. I am therefore of opinion that the five castes discussed, had a more intimate connection with Hinduism, than the others of the third grade before the recent Brahmanisation set in.

Three castes, not criticised by the Gubhaju, but requiring some discussion, are the Kaussah, Ballahmi and Nalli. The first appears in Earle's list as Khoosal, with the same function as given in Oldfield. Their Newari name Sāwā is found in another list of Hodgson,<sup>1</sup> where they are described as bleeders and suppliers of leeches. The Khusa of Hodgson in spite of the similarity of name can hardly be identified with this caste. The occupation given has no connection with bleeding or inoculating with smallpox; and elsewhere, in a historical list<sup>2</sup> Hodgson has given Sāwā and Khoosā separate. The Kāthā are said to be the principal subcaste<sup>3</sup> of the Khoosa. No other authority has however connected the two together

<sup>1</sup> Essays on the Languages, etc., Part II, page 14.

<sup>2</sup> Hodgson's Manuscript volume: "Institution, Law, Army."

<sup>3</sup> The divisions of the Khoosa are described as marrying within each group; such endogamous groups are equivalent to subcastes within a caste.

and this cannot be accepted until further evidence is available. Since the subcaste is a definitely separate endogamous entity, it may be considered as a separate caste when comparing the different accounts of the Kāthā, leaving out the question of relation with the Khoosā.

The Nalli are mentioned outside Oldfield's list, in one other place, a historical list of Hodgson, where they are described as painters of pictures of Matsyendranātha. With the information available, they seem to be a section or caste following a comparatively unimportant, religious vocation and their existence as temple menials need not be discussed.

The Ballahmi of Oldfield are not mentioned by that name in any other list. The Duita of Earle and Dhauwi of Oldfield follow the same occupation, and in the discussion of the Lamu or Dooyu, were considered to be probably the same as this last caste. As the Ballahmi are not mentioned elsewhere by that name, it is possible that they are merely the more primitive and rude section of the Lamu. Nothing more can be said in the absence of further information, and the question is not important.

There are some castes in Hodgson's list not occurring in Oldfield's table. Of these the Moosah may be neglected as Hodgson himself states that they have left their former occupation and taken to agriculture. In this historical list (App. E) also, he describes them as practically non-existent in his time. They have evidently been absorbed in some other group.

The Bows described by him as agriculturists are probably some section of the Jyapoos entered under a different name. A caste of Bali who are agriculturists is mentioned by him elsewhere.<sup>1</sup> The Bala included by him among Khusa subcastes, are also agriculturists. As their origin is stated to be unknown, it is not at all clear why they have been classified with other Khusa subcastes. The term Bali is however mentioned by Earle as a synonym of Jyapoos and all these sections are probably Jyapoos entered under slightly different names. In the absence of further information, they cannot in any case be considered as distinct castes or divisions.

The washermen have been placed by Hodgson among pure castes in his manuscript, when describing the Newar social organization, but mentioned among outcastes in his essay on Law<sup>2</sup> in Nepal; Oldfield places them among impure castes; Earle also places them among low castes. Further, in both the historical lists (App. E), of Hodgson and of Lévi, the washermen are described as pure castes. In Lévi's list,

<sup>1</sup> Hodgson: *Miscellaneous Essays*, ibid., Vol. II, p. 245 "On the Law and Legal Practice of Nepal."

<sup>2</sup> Hodgson: *Miscellaneous Essays*, ibid., Vol. II, p. 245. "On the Law and Legal Practice of Nepal."

the Rajaka are said to have been at first impure but later raised to purity by royal favour on account of services rendered. There seems therefore good ground for holding that the washermen at one time ranked with the pure castes. But at the present time, and also in the recent past, the balance of evidence is against a good position of the washermen. The fact that the Gubhaju accepted Oldfield's list of outcastes, merely mentioning that they have now become *Sivamārgis*, also supports this conclusion.

The castes that remain, are the *Tamanta*, *Cheāta* and *Chalan* of Earle and the additional sections of *Jyapoos* given by Hodgson, but not found in Oldfield's list.

The coppersmiths of Earle are not found in any list of the third rank of Buddhists, nor in any account of Hindu castes. The only other mention of them, is in the historical lists where Hodgson describes them as a mixture of *Bauddhas* and *Hindus*. There are however *Uda* coppersmiths, as well as *Banrā* sections of the same, and it may be that Earle's *Tamots* are merely some of these professionals who returned themselves as *Hindus* following the trade of coppersmiths. In the case of the historical lists, Lévi does not at all mention *Udas* or *Banrās* and it cannot be argued who his *Tāmrakāras* are. Hodgson indeed describes both the *Bauddha* groups but for reasons given (App. E), too much reliance cannot be placed on those tables in the absence of corroboration.

The *Cheāta* follow the same profession as the *Gout* of Hodgson's *Jyapoos* and the same work falls within the professional duties of the *Ghukoo*. It seems however scarcely likely that there should be numerous sections of *Jyapoos* for burning the bodies of high caste *Newars*. The distinction in Hodgson's list is nominal, as intermarriage and commensality is allowed, and both belong by traditional descent, to the same group. The *Cheāta* are, therefore, probably the same as this particular section of *Jyapoos*; they may have of course changed into a definite caste outside Nepal.

The *Chalan* follow a profession similar to that of the *Kahabhojas*, and are probably the same people. Absence of further definite information precludes their acceptance as a separate section or caste of Nepal.

I should like to point out that there is a group among outcastes also, who play on the *Kāhā* at funerals. There are thus two such sections following this occupation, one among pure *Newars*, the other among the degraded group. What are the other differences between the two is not known and nothing can therefore be said about them.

Of the extra sections of the *Jyapoos* in Hodgson's list, the *Koenaso* and *Jewanalie* are merely ordinary cultivators; similar to them are the *Booshee* or *Pamee* who add to this work, the ruder and simpler work of collecting firewood. All

these three sections may therefore be considered as ordinary Jyapoo cultivators.

The Cheos are not mentioned anywhere else, and Hodgson himself does not explain what precise duties they perform, and for what deities. In the absence of further information, this statement of Hodgson cannot be accepted. There may of course be a class of Jyapoos who are grooms.

The Mooshaka are also not described anywhere else, but they are mere torchbearers. As no real distinction is shown from other Jyapoos, it may be conceded that some Jyapoos specially follow this occupation. This kind of menial's work for the gods of the Newars is known from other examples, to be performed by Jyapoos (see also Jyapoo in App. E).

The Ookoo Kumbhals are potters specially working for Matsyendranātha, and enjoying a grant of land in return. Such a practice is common to the great temples of India and as there is no real distinction from Jyapoos, there is no ground for criticism. The large amount of details given favours the view that Hodgson's statement is correct.

The Soā section is said to follow the occupation of cooks to Matsyendranātha and also certain menial offices connected with it. It is not very unusual in India to have priests and cooks to a deity belonging to different ranks and castes; and low castes are sometimes associated with the Brahmans, in worship.<sup>1</sup> This statement in itself therefore presents nothing startlingly uncommon, but in the absence of corroboration it is best to assume that the Soā are merely one of several sections of Jyapoos who serve in the capacity of menials, in the worship of Matsyendranātha.

One fact should however be noted about all these sections, that all the divisions of Jyapoos definitely connected with the worship or service of Matsyendranātha, belong to that group of them which claims a mixed Banrā ancestry.

The different accounts of outcastes now remain to be discussed. Before proceeding to it, a slightly misleading expression of Hodgson should be explained. The curious introductory sentence of Hodgson in connection with the artisans does not at all mean that they are outcastes. He has simply put down alternative translations of the word *Ektthureeah*.

The two renderings given make this quite clear. The mention of outcastes from whom water is not taken occurs immediately after this group in the manuscript, and dispels all doubt on this point.<sup>2</sup> The anomalous phrase remains in

<sup>1</sup> The case of the Daitas in the temple of Jagannath at Puri is a good illustration of this. They are believed to be of Savara origin. It cannot of course be claimed to be a parallel. *C. R.* 1901, Bengal, p. 406-7. This does not of course contradict the statement made in connection with the Bhanni.

<sup>2</sup> The list of outcastes in his essay on 'Law and Legal Practice'

the manuscript probably because it was not corrected later by Hodgson. Besides, Hodgson has used the word outcaste elsewhere in a somewhat loose way to denote castes of low social status. It does not necessarily mean impure. In his essay on the geography of the Himalaya,<sup>1</sup> he mentions the "helot craftsmen" of the mountains of Nepal and of the valley of Nepal, whom he describes as being "degraded to the extent of being outcastes." The craftsmen of the valley include the following castes<sup>2</sup> :—

1. Po. 2. Kulu. 3. Nay. 4. Chamakhala. 5. Dong or Jugi. 6. Kou. 7. Dhusi (metallurgist). 8. Āwā. 9. Bāli (agriculturist). 10. Nou. 11. Kuma. 12. Sangat. 13. Tatti. 14. Gathā. 15. Sawō (bleeders and suppliers of leeches). 16. Chhipi. 17. Sikami. 18. Dakami (house-builders), and 19. Lohong Kami.

It is evident that this is not a list of outcastes of Nepal at all. It merely gives a composite list of outcastes and the artisans who occupy a lower status than the other castes like Vaiśya or Kṣatriya or the cultivating Jyapoos. If his note on the same subject in another essay is consulted, it is found that this expression with him does not necessarily mean impurity. Thus he proceeds in a note on artisans "when we consider the indispensableness of these craftsmen it is remarkable that they should have continued to the present day in a helot or outcaste condition not only among Arians (= Aryans) but even among the non-Arians."<sup>3</sup> The craftsmen referred to are however certainly not helots in the plains, nor are they outcastes, except a few. Even these do not fall within the real untouchable castes, but as they are impure, this point is not important.

I shall now proceed to the discussion of outcastes proper. These are said by the Gubhaju to have all become Śivamārgis. But as they were always heterodox, and never seem to have had Banrās as priest, and were served either by caste elders or by other low caste men (see App. E where details are given in connection with the historical list of Hodgson), this means very little. Even now when counted as Śivamārgis, their priests cannot be high caste or pure Brahmins.

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settles this undoubtedly, but as this table may be based on Jayasthiti Malla's code, and as the value of the manuscript as a source of information on Nepal is in any case vitiated by such a glaring error, the above justification is necessary to prove that it is not really a mistake.

<sup>1</sup> Essays on the Languages, etc., *ibid.*, part II, p. 18.

<sup>2</sup> The occupations of all the castes are given in the table furnished in the essay. As however most of the castes are described in the table at the end of this appendix and follow the same occupations as in this list, only those which differ or do not occur in the table are given here.

<sup>3</sup> Miscellaneous Essays, Vol. I, p. 120, footnote. On the Kocch, Bodo and Dhimal tribes.

When Buddhists held their own, this group, standing outside all recognised classes, gave their nominal adherence to Buddhism. Now that Hinduism is in power, the name has changed. This seems to be what has happened.

All the outcastes found in Oldfield's list are found in that of Earle, except the Dhauwi. This caste has, however, been already discussed under Dooyu, when treating of the third grade of Bauddhamārgis. In his manuscript Hodgson omits the Sangar and the Dhunt. But the latter are described as Dong or Dung by Earle, and there is no difference in occupation between them and the Jugi musicians. In the list of outcastes given by Hodgson in his essay on the geography of the Himālaya the two names are treated as synonymous. In the list given in his article on the Law of Nepal, however, he mentions both Jugi as well as the Dung or Duni, but no occupation is given. The two castes are probably the same, although this is not absolutely certain.

The Sangar has already been discussed, and Oldfield is accurate in this matter.

Hamilton gives some of the castes correctly, others wrongly dragging in members of other classes. The Salmi, Chhipi, and Kow have already been discussed. As the Tepai have no description attached to them and do not occur in any other list of outcastes, attempts at guessing what caste is meant, are unnecessary. The Kusulia, Kasai and Puria have been given more or less correctly but the Chamkals are wrongly described as leather-workers. Their occupation has been confused with that of Kulus, while their own occupation is given to the Bala, who do not appear in any other list as such. It is quite possible that this word is merely a synonym of Chamkallak.

It may be noted that except the Jugi musicians, all the other professions are dirty, degrading or involve little skill or progress in arts.

## OLDFIELD'S ACCOUNT.

## HODGSON'S ACCOUNT.

Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
The different divisions of the heterodox Buddhists are Jaffu, divided into six classes, which eat together and inter-marry :		The Jyapoo or Kisanee, or cultivators, are divided into three groups according to their descent, and further subdivided by occupations followed. All however intermarry. The groups are called (i) Bheendhungo, (ii) Dhungo and (iii) Dungoo, and are said to be descended from Vaisyas, Banras and Sresthas respectively. To (i) belong sections Nos. 4 and 15, to (ii) belong Nos. 1, 3, 6-8 and 12-14. Rest are of (iii) group. Priests are Banras and Achars :	
1. Jaffu or Kassini ..	} Cultivators.	1. Mulmi, Moot or Mow.	They are said to have come from Kamrup with Matsyendranath. Their occupation is to bring flowers from jungle to sell, and trade. Also, they have to supply free to Matsyendranath's temple the <i>Moussa</i> , a strong-scented yellow flower, in return for which they hold a jagir from the deity. They also cultivate land.
2. Boni ..			
3. Mu ..			
4. Danghu ..	Land surveyors and measurers.	2. Dungoo ..	Measurers of cornfields, cultivators, bricklayers, etc.
5. Karbuja ..	Hereditary musicians at funerals but not at any festivals. They are mostly employed in agriculture.	3. Kalabhhoja or Kahaohja.	They blow the Kaha at funerals. They are also cultivators, etc.

OLDFIELD'S ACCOUNT.		HUDGSON'S ACCOUNT.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
6. Kumhar .. ..	Potter.	4. Ookoo-Kumhal ..	Potter to Matsyendranath, Jatadhari Lokeswar, etc. They have a jagir from these deities. Ookoo is the name of a maha in Patan. They are said to be descended from Vaisya, ♂ and Jyapoo ♀.
The others are:		5. Koomahl ..	Potters, with two divisions, one mak- ing red pots, the other black, the latter being inferior to the former. They are also cultivators.
7. Dalli .. ..	A class of sepoy's.	6. Duli ..	It means soldier. They were merce- nary soldiers in the times of the Newar Rajas. Since their fall, they have been earning their livelihood as cultivators, porters, etc.
Balhaij .. ..	Makers of the wheel of the car of Matsyendranath. They occasionally do a little other carpentering also.	..	..
9. Nalli .. ..	Men who paint the eyes of the golden figure of Bhairab on the car of Matsyendranath.	..	..

10. Yungwar	..	Makers of the car of Matsyendra-nath.	7. Yungwar	..	To tie the wheels and other parts of the car of Matsyendranath, to make cots with canes, cultivate, etc.
11. Gaukau	..	Men who drag the car at the Matsyendra and Bhairab Jattras.	8. Glukoo	..	To burn dead of Newars—Banra, Uda, Jyapoo—and to stop the wheels of Matsyendranath's car when they go out of the line of the road.
			9. Mooshaka	..	To carry lights before deities and Newar Rajas. Also cultivators and porters.
			10. Cheo	..	By profession grooms; also to sprinkle liquor on the diet of Newar deities. Porters and cultivators also.
			11. Awal	..	Brick and tile makers and thatchers.
			12. Gout	..	To burn dead of Newars—Banrias, Udas and Jyapoo—and to cultivate and carry burdens also.
			13. Booshee or Pamee	..	To bring wood from jungles. Also, cultivators and porters.
			14. Soā	..	To cook for Matsyendranath, and clear the place where the deity has his dinner.
			15. Koenaso	..	Cultivators and porters.
			16. Jewanalee	..	Cultivators and porters.

OLDFIELD'S ACCOUNT.		HOBSON'S ACCOUNT.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
12. Chitrakar .. ..	They paint portraits, pictures, as well as houses.	Next come "a class of Newars called Ekthureea or out-caste, or single body, distinguished by their profession or trade." They are seventeen in number, and are as follows:	
13. Bhat .. ..	Dyer of red colour of woollen and hair clothes, but not linen.	1. Poon or Cheeka (corrupt form of Chitrakar).	Painters of sacred pictures. Priests are Banrās (=P.B.).
14. Chhippah .. ..	Dyers of blue colour of any kind of texture.	2. Bhāt or Bhā ..	Dyers of cloth to red colour and acceptors of death gifts on the 11th day. (P.B.)
15. Kauā or Nekarmi ..	Ironsmiths, working at all kinds of work in the trade.	3. Cheepā .. ..	Dyers of cloth, umbrella makers, and cultivators. (P.B.)
16. Nau .. ..	Barbers and barber surgeons.	4. Kow or Nekarmi ..	Ironsmiths. (P.B.)
		5. Nao or Napit ..	Barbers and surgeons (P.B.); their water is accepted. They worship Śiva as well as Buddha. They shave and cut nails of people of castes from Brahman to Jyapoo, but only shave the lower classes. Said to be descended from a Śudra who came with Matsyendranath.

17. Sarmi	..	..	Extractors of oil from mustard and other vegetables. They are now largely in trade.	6. Salmee or Samee ..	Pressers and sellers of oil. They have to erect scaffolds at the Jattras or festivals. (P.B.)
18. Kausa	..	..	Inoculators of smallpox.	7. (a) Khoosa ..	There are five branches, of which the Khoosa cultivate and thresh rice.
19. Tippah	..	..	Cultivators of vegetables.	(b) Kutā ..	The Kuta, the principal branch, cut the navel pipe.
20. Kalthar (spelt Kāthā in C.R., 1901, when reproducing the list.)	..	..	Wound-dressers. (In C.R., 1901, they are described as navel cord cutters. This list otherwise follows Oldfield faithfully.)	(c) Teepah ..	An offshoot of the Khoosa, said to be offspring of a Khoosā woman by a Vaisya Raja of Newar. They sell palong, a table vegetable.
21. Pulpul	..	..	Carriers of light at funerals	(d) Gnai Gubha ..	Priest of Gnais. There is at present only one such family.
22. Konar	..	..	Carpenters who make the Charka (spinning wheel) and other accessories for spinning. They do not do general carpentering nor will other carpenters generally make these.	(e) Bālā ..	Parentage unknown. They are cultivators, and also erect stages, etc.
				These five classes do not intermarry.	
				8. Poolpool (found only in Kathmandu).	They go before the dead of Newars up to the Ghāt, carrying an earthen lamp in a small basket, and also a bell and a basket. They are cultivators and traders too. (P.B.)
				9. Koonā and Yung-kurnee.	They prepare perfumes for the deities; also make Charkas, etc. The Koonā is said to be descended from a Barahee Kurnee father. (P.B.)

OLDFIELD'S ACCOUNT.		HODGSON'S ACCOUNT.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
23. Garhtho (spelt Gāthā in C.F., 1901).	Gardeners.	10. Gatah .. ..	Gather and sell wild flowers. At the festival of Ustmatrikā, they take a live hog and tear it with their teeth and nails like a rapacious animal and drink the blood.
24. Tatti .. ..	Workers in cotton-wool for clothing the dead and for night caps for infants' heads when the hair is first cut off.	11. Tatee .. ..	They weave pongā, a kind of cotton cloth to put on the dead of the Newars, and also the cloth with which certain servants of Matsyendranath cover themselves, at the time of performing services; also when a Newar adopts Buddhism, or a Sati immolates herself on the funeral pyre. Priests are generally Banras except some who have Brahman and Achar gurus.
25. Ballah .. ..	Palki-bearers for the royal family and some of the wealthy sirdars. The Lamu are the same as Duan or Putwārs, one of whom saved the life of Prithinārayan, the Gurkha conqueror of Nepal.	12. Dooyu or Laemoo or Putwar.	Hunter and fowler. They are said to have saved Prithinārayan's life and enjoy royal favour; the illiterate can be clerks at court, the illiterate palki-bearers. Their priests are Banras but they take diksha from Brahmans.
26. Lamu .. ..			

27. Pihī .. ..	Maker of wicker-work baskets, measures of corn, and umbrellas such as the poor use when working in the fields.	13. Pahee or Pakree ..	They consider themselves to be the original Jyapods. They make baskets, brooms, etc.; also bring bamboos and reeds from jungle. They worship both Buddha and Śiva.
		Gamal .. ..	An offshoot of Pahee; they make baskets, brooms, etc.
		Thūnee Srisht ..	An offshoot of Pahee; they bring and sell corn from villages.
28. Gaowah .. ..	Cowherds.	14. Goa .. ..	There are two divisions:
29. Nanda Gaowah ..		Nandgoa .. ..	(i) The Nandgoa descended from a Jyapoo mother, and
		Khagoa .. ..	(ii) The Khagoā, of a Khoosā mother, the father being a Goālā of the plains in both cases.
30. Ballahmi .. ..	Woodcutters and sellers of household fuel.		The first breed and sell cattle, and the second breed and sell fowl. The latter have now given up their profession of poultry breeders.
			Brahmans perform all the auspicious ceremonies, the Banras the funeral rites. They follow both Śiva and Buddha.
		15. Sughang .. ..	Washermen, title Rajak. (P.B.)
		16. Moosā .. ..	Formerly weighers of flesh. Now traders and cultivators. (P.B.)
		17. Bow .. ..	Cultivators. (P.B.)

EABLE'S ACCOUNT.		HAMILTON'S ACCOUNT.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
Japu .. ..	Cultivators; the Newari synonyms are Bali and Doka-Kawmi. High castes.	Jopu .. ..	Next to the Bangras among Baudhdh-mārgis pure, are these. They were originally all cultivators, but some have now become traders and porters.
Intermediate castes:		Uda .. ..	These follow next to the Jopu, but almost of the same rank. They were originally all traders.
Kumha .. ..	Potter; the Khas term is Kumhal.	Next follow three castes of nearly the same rank:	
Bhat .. ..	Religious caste; receiver of gifts at funerals.	Got .. ..	Gardeners.
Ohhipi .. ..	Dyer of cloth.	Kurmi .. ..	Bricklayers and carpenters.
Kau .. ..	Blacksmith.	Now .. ..	Barbers
Nau .. ..	Barbers.	Next come three of nearly same rank:	
Cheātā .. ..	Burners of the bodies of high caste people.	Songat .. ..	Washermen.
Chalan .. ..	Musicians who attend when dead bodies are taken to be buried.	Japu .. ..	Potmaker.
Khusal .. ..	Inoculators of smallpox. A Newari equivalent is Sāvā.	Hial or Sial .. ..	Cowherds.

Katha	..	..	..	Cutter of the umbilical cord.
Kawmi	..	..	..	Carpenter and sweet-meat maker. Sikawmi, Lohar Kawmi are the Newar names for workers in wood and iron respectively. The caste name is however merely Kawmi.
Tamautā	..	..	..	Metal utensil maker.
Gāthā	..	..	..	Gardener.
Tati	..	..	..	Weavers of winding sheets.
Āwā	..	..	..	Mason.
Duitā	..	..	..	Collector and seller of wood and fuel.

Nearly of the same rank are the persons called by Newars Dhui and by Parbatiyas Putaul, persons who carry the palki of the Rajas. None but Bakali Bangras will serve them.

All the castes enumerated up till now are pure, and Hindus of any rank may drink water drawn from a well by them.

*Oukastes from whom Water is not taken by Higher Castes.*

OLDFIELD'S ACCOUNT.		HODGSON'S ACCOUNT.		EARLE'S ACCOUNT.		HAMILTON'S ACCOUNT.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
These castes are mixed Bauddha and Sivamargis:							The touch of these castes defiles :
Nai or Kas-sai.	Butcher: killer and seller of buffalo meat.	Nae or Kas-sai.	Butcher: their priests are Nai Gubhas and they follow both creeds.	Nai, (or in Khas) Kasai.	Butcher.	Salim ..	Oilmakers and weavers of garlands.
Joghi ..	Musicians at Newar festivals.	Jugi ..	Tailors and musicians.	Jugi, (or in Khas) Kusuliah, Suchikar.	Tailor and musician.	Kasali ..	Musicians.
Dhant ..	Ditto.	Dung or Duni (from .. Law and Legal Practice of Nepal.)	..	D a u t a , D u n g , D u n i o r D o n g .	Musicians.	Still lower are :	
Dhauwi ..	Wood cutters and charcoal burners.	..	..	..	..	Kow ..	Ironsmithe.
						Tepai ..	..
						..	..

Kulu ..	Leather workers.	Cooloo ..	Basket makers and leather workers. Tribal elders are their priests.	Kulu ..	Drummers and carriers.	..	..
Puriya ..	Fish-catchers, executioners and dog-killers.	Pooriah ..	Public executioners, fowlers and fishers. They also take the coverings of corpses.	Po, Pore or Porya.	Sweepers, and burners of dead bodies, executioners and workers in bamboo. But they will not remove night soil.	Puria ..	Three exceedingly low castes follow: Fishermen and basket makers. Remover of offal, etc.
Chamkallak	Sweepers.	Chamokhul-lak.	Night-soil removers. They accept the 11th day gifts of Cooloos. Some are criminals.	Chamā Khala.	<i>Mektar</i> , i.e. night-soil remover.	Chamkal ..	Dresser of leather and shoemaker.
Sangar ..	Washermen.	Sangat (from "Law and Legal Practice of Nepal.")	..	Pasi or Sangat.	Washermen.	..	..

## APPENDIX E.

In the second half of the fourteenth century, Jayasthiti Malla, the King of Nepal invited pandits from the plains of India and had a treatise on the caste system of Nepal drawn up. This list is quoted by Lévi in his work on Nepal<sup>1</sup> and also by Hodgson in his manuscript.<sup>2</sup> For the sake of comparison, the two lists have been put side by side. Hodgson's list started, according to his introductory sentence, from the vilest castes, ascending to the highest. The order has been reversed for convenience, but no displacements have been made except in the case of one caste, the Kāsā or bell-metal workers, who were described by him immediately after the Vajra Āchārya, and before the Pithacharj. The order of Lévi's arrangement has been changed to make comparison possible but the numberings show the order in which the castes came in the table. The numbers do not generally agree with those given in Lévi's book, as I have left out the twenty-one castes, of which no description of occupation is given. It is evident that they cannot be of any use in such a table. It should be remembered that Lévi gives the Sanskrit terms for the castes, while Hodgson's terms are mostly Newari and sometimes Parbatiya.

In addition to the castes given in the list proper, Lévi furnishes information about other castes. According to him, the Brahmans from the plains who drew up the rules, admitted that the Bandyas of Nepal were the true descendants of Brahmans and Ksatriyas, converted by Buddha Krakucchanda in the Tretā Yuga. Evils of the times and Śaṅkarāchārya's compulsion had led to their abandoning the celibate life and taking to family life and secular pursuits. But they were honoured none the less by the four Varnas. Hence they were recognised as Brahmans and Ksatriyas according to their descent, but as they were held to be all of one class like Sannyāsis, they were not formed into subdivisions.

The population was divided into sixty-four castes, of which forty-three have been given and twenty-one omitted for reasons stated.

In addition, there was a large group of illegitimate progeny of the Brahmans of the plains who had fallen willing victims to the charms of the women of Nepal. The population while it respected and welcomed Brahmans, were not at all disposed to accept a degraded position for these children of irregular union. The Brahmans had solved the difficulty

<sup>1</sup> Lévi: *ibid.*, page, 232 et seq.

<sup>2</sup> Hodgson: "Army, Law, Institutions." He gives another similar list of castes under the title "Rules of caste by Raja Vishnu Mull."

by forming them into a group, calling it Jaisi, a more or less indeterminate class which aspired to rise to the rank even of Bandyas. But as soon as these latter were recognised as Brahmins, the pretension of the Jaisis had to be disallowed. They were then divided into four sections, Āchārya, Daivajña, Vaidya, Śreṣṭha, according to the position of their mothers in Newar social organisations. The Jaisi Āchāryas born of a mother of the Āchārya class fulfilled the function of Āchārya for the group of Jaisis. The Jaisi Daivajñas became their astrologers, while the Śreṣṭhas represented the Kṣatriyas in this particular community. The Jaisi Āchāryas were further subdivided into three classes, and the Daivajñas into four, while the Śreṣṭhas had a large number of divisions. The ten upper classes of Śreṣṭhas and all Āchāryas and Daivajñas were allowed to wear the sacred thread. The distinction made in the case of Śreṣṭhas was due to the fact that they followed diverse occupations of which some are respectable, others not particularly so. Further, the practice of medicine was reserved for Jaisis, those who followed it being grouped into one caste, which had four subdivisions.

The peasants, Jyapus or Jaffus, who form half the indigent populations of Nepal were ranked as Śūdras and divided into 32 classes. The Kumhals or potters, formed four other divisions of the same class, while the Podhyas comprehended all vile occupations in their professional duties. This last group and the Charmakāra and the Rajaka are impure in that their water cannot be taken. In the seventeenth century, however, Lakṣmi Narasimha Malla of Kathmandu, as a reward for services, done to him, raised the last mentioned caste to the status of purity.

I shall now compare the two lists. It has already been pointed out that there are twenty-one castes in Lévi's list of which no description is available; consequently no objection can validly be brought that a caste which occurs in Hodgson's list does not find place in Lévi's table. This point has to be left indeterminate. The only way of comparison is to see how far the available description of Lévi's list agrees with that of Hodgson.

The similar castes have, as far as possible been put side by side, and bring out the close agreement strikingly. Thirty-three castes out of forty-three have parallels in Hodgson's table, and the four castes mentioned later, are also found there. Apparent differences, as in the case of Bandyas of different kinds, disappear, if the account given of Bandyas in Appendix B is read in this connection. In some cases, as for the group of courtiers and counsellors, the whole group finds a parallel in one or more castes, as in the Amātya and courtiers of illegitimate royal birth in Hodgson's list. Sometimes the description in Hodgson's list enables us to sepa-

rate the classes and classify them properly, as the different Brahmanical Āchāryas, some of whom correspond to Āchāryas and others are (8, 9, 10), probably connected with Jaisis. Generally, however, the absence of details in Lévi's list makes closer identification impossible. Of the two wood-workers, the one mentioned as carpenter in both lists have been equated, leaving the Dārukāra and Yangkarmi, who have therefore been placed side by side. Similarly I have put, but more arbitrarily, the two weaver castes, one beside the pure Tatti and the other lower down, according to their position in the list, which although not made clear, has some bearing as regards their place in the hierarchy. Both the weaver castes, however, are marked with queries, showing that Lévi is not sure of their profession.

Of the castes of which the occupation is given in Lévi's list, but which do not occur in Hodgson's table, three are marked with notes of interrogation, and being speculations, may be left out. The Silpikāra or artisans pure and simple may also be left out, as by itself it is a term for a group of castes, not a single caste name. The omission of the singer and actor is not serious as also of the regulator of weights and measures. The absence of plasterers and ivory-turners are the only important exceptions. It is quite possible, however, that Hodgson or his informant may have considered them equivalent to one of the numerous groups of carpenters and masons, and thus left them out.

In spite of these discrepancies the general agreement is remarkably good, and as Hodgson had about as much facility to examine documents and people (and perhaps more) as Lévi, his list may be accepted as fairly accurate. The real importance of the lists is, however, in the light which they throw on the condition of the Newars, before the recent disturbances. It has become apparent from the discussions in the previous appendices that most of the arts were formerly practised by Buddhist Newars and are even now largely so. Some striking exceptions have already been discussed. The evidence of these historical lists, so far as they go, cannot be said to run counter to this conclusion. For although ostensibly a classification of Hindu castes, the table of Jayasthiti Malla is really composite. Bandyas become Brahmans, Jyapus are Sudras and so on. As no Buddhist rule or religious revival is known to have occurred in Nepal after this time, it is evident that the present Buddhists must have existed then as now to some extent at least. To judge from the gradual decline of Buddhism with the passage of time, Buddhism was then probably stronger than now. Hence Lévi's list cannot be considered as that of Hindus solely. As in the case of Earle's list (App. D), the composite nature of the list is merely known but not shown in it. The other

list, that of Hodgson supplies the data on this point. The different castes are described and their priests indicated. There are other details, some of which I have given, omitting others which are not directly connected with their position in the social hierarchy. If these data are accepted as correct in the sense of being derived from reliable sources,<sup>1</sup> the historical lists fit in very well with the conclusions arrived at from present day conditions.

The castes that have Brahman priests alone, are the royal and warrior castes, court officials, scribes, astrologers, the different Āchāryas who are a kind of priests of local deities, and two artisan castes—the cowherds and the weavers who make the sacred thread and clothes for idols.

The Hindu weavers are evidently from their occupation a very special group and although not mentioned in any of the lists given for the present state of castes, may exist as temple-menials at least. For clothes of idols cannot come from the makers of grave clothes who are mentioned both in the historical as well as modern lists. Beside these, there are no other weavers in Nepal, all the spinning and weaving necessary for household needs having been performed up till now at least, by Newari women.<sup>2</sup>

The cowherds have already been discussed in the preceding Appendix, and it has been shown that they are a Hindu caste. Hence if we now proceed to compare the list of Hindus here obtained with that of the existing Hindu castes, meaning by Hindu, in both cases castes which have only Brahmans as priests and are not heterodox—the resemblance is very striking, and close. The two apparent discrepancies merely tend to support the agreement.

I do not at all wish to emphasise the information obtained from these two lists, as it is not possible to subject them to a good test. It is however quite clear that no argument can be drawn from them against the conclusions of the preceding Appendices. Whatever their real value may turn out to be, they support those inferences very closely. This is all I wish to draw attention to in these lists.

I shall add to this appendix some Chinese accounts of Nepal (which have been quoted by Lévi) for completeness.

<sup>1</sup> There is no data to go by on which to examine the two lists critically by themselves, about their sources, etc. We have only the reliability of the observers to depend upon.

<sup>2</sup> *Note on the state of Arts of Cotton spinning, weaving, printing, and dyeing in Nepal*: by Dr. A. Campbell, J.A.S.B., April 1836, p. 219, et seq.

How universal spinning and weaving is in Nepal may be judged from the fact that every Newar parent has to present his newly married daughter with a *yeau* (Newari spinning wheel) and *keko* (New ari seed separator) in addition to her dowry. Campbell's description of the *yeau* and *keko* leaves no doubt that they are the same instruments as spinning wheel and seed separator of the plains of India.

The first Chinese traveller who mentions Nepal is Hiouen Tsang who visited the countries of the West in 629-44 A.D. He however did not visit Nepal in person and his account is rightly held by Lévi to reflect the prejudice of the plainsmen against the mountaineers. According to him, the country is very suitable for cultivation of grain and abounds in fruits and flowers; copper is mined and exported and used as currency. The people are treacherous, cruel and ignorant of any literary knowledge but clever in the arts.

Much greater information is available from the mentions of Nepal in the annals of the Tang dynasty. Lévi considers that the lost accounts of Wang Hiuen Tse, who came to Nepal at about the time of Hiouen Tsang's departure from India, supplied the greater part of the materials. In any case the description evidently refers to the time of Narendra Deva of Nepal who was reigning when Wang Hiuen Tse visited the country.

According to the annals, the people shave their heads to the level of their eyebrows; they pierce their ears, wearing tubes of bamboo or horn of oxen, and it is a mark of beauty to have ears falling to the shoulders. All their utensils (and implements)<sup>1</sup> are of copper, which is also used as currency. Traders, shopkeepers and itinerant dealers are numerous, but cultivators are scarce, as they do not know how to work with oxen. Their houses are of wood and the walls sculptured and painted. They are fond of dramatic representations and of playing the trumpet and tambourine. They are also clever at forecasting destinies and in natural philosophy, as also at drawing up almanacs. They worship five celestial deities, sculpturing their images in stone.

Then follows a description of the magnificence of the King, wearing pearls and precious stones and the palace with its seven-storied copper-roofed tower and its columns, balustrades and beams all inlaid with gems and precious stones.<sup>2</sup>

It is therefore evident that as early as the seventh century, the people of Nepal were skilful workers of stone, wood and copper and had attained excellence in other departments also. As regards the statement about cultivation, I take it in the sense of plough-cultivation with the help of bullocks, which seems to be the meaning from the context. It would be interesting to know the exact connotation of the Chinese ideograph translated by "cultivation" in French.

<sup>1</sup> Tous leurs utensils sont faits de cuivre.

<sup>2</sup> Sylvain Lévi in *Journal Asiatique*, 1894, Part II, pp. 65-67. Quoted also in his *Le Nepal*, Vol. I, pp. 163-5.

The actual writing down of these details in their present form dates about three centuries after Narendradeva, but as pointed out the materials are believed to have been mainly gathered from the lost account of Wang Hiuen Tse.

HODGSON'S LIST.		LÁVI'S LIST.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
Devabrahmana ..	.. They are to be spiritual guides to Rajahs and men of good castes, of social rank of Sresthas and upwards.	1. Brahman or Dvijā or Vipra.	Sacerdotal caste. They are divided into the Pancha Gauda and Pancha Dravida.
Rajah ..	.. To govern and rule according to maxims of political wisdom.	2. Bhūpa. Rājā or Kṣatriya.	The kings and the military caste.
Thaku. Thakojū and Thakur.	Soldiers (= P.Br.). Priests to be Brahmins	5. Mantrin ..	..
Amātya or Mahat	Menial servants of princes.	6. Sachiva ..	Comrade.
Bhāro or Srestha	Traders and shop-keepers. Priests to be Gubhals (P.G.) or Brahmins, according to creed.	7. Amatya ..	Minister.
Kayastha or Kaith	Scribes and notaries (P.Br.)	These three castes comprise the high officers of the court.	
Jaisi or Josi	Astronomers, astrologers, and performers of such religious rites as they can. They are to marry with Sresthas. (P.Br.)	3. Lekhaka ..	Writer.
		4. Kāyastha ..	Scribe.
		11. Grahachintaka ..	} Astronomers.
		12. Jyotisha ..	
		13. Gapika ..	Astrologer and calculator of events.

HODGSON'S LIST.		LÉVI'S LIST.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
Raj Lavat .. ..	Royal bastards, following occupations at court.	14. Daivajña .. ..	Diviner.
Thakoo Lavat or Patra Vans.	Royal bastards, following profession of arms. (P.Br.)	Jaisi (See discussion);	
Devācharj .. ..	Priests.	8. Pujita .. ..	} These three castes probably included the priests of different ranks employed in the worship of local deities or expiatory ceremonies. The Pujita is without doubt the priest of the temple of Śiva and Śakti. The Āchārya is the Brahman of the Hinduised Newars, to whom he is the spiritual guide and priest at certain ceremonies. The Devachinta is another variety of this type.
Gurbacharj .. ..	To give <i>dik-ā</i> to Sivamargi Sresthās and minister in all auspicious rites.	9. Devachinta .. ..	
		10. Āchārya .. ..	
Karmacharj .. ..	To perform menial services at the Taleju temple. Their guru and purohit shall be Brahman.	.. ..	.. ..
Sivacharj .. ..	To make Puja at the temples of the Lingam and to exercise other offices	.. ..	.. ..

Pithachari	..	..	of priesthood according to ability. They should marry into the middle grade of Sresthas.		
Vajra Acharya or Gubhal.	..	..	To make Puja at all Peeths, and perform the Bali (sacrifice) and house purificatory ceremonies. They should marry into the middle grade of Sresthas. They are to wear the sacred thread and have Brahman priest.	..	
Banrā or Bandya	..	..	Priests to Banrās, Sresthas, Jyapoo, Madhi Karmi, Sikami, Lohang-Kami, etc., as mentioned below.	See discussion for Bandyas.	
Bikhu-Bandya or Bikhu-Burraj.	..	..	Goldsmith and worker in all metals; assayers and metallurgists. They are tonsured.		
Kāsā	..	..	To make vestments of deities in esoteric worship. They are tonsured. (P.G.)		
Madhikarmi	..	..	Worker in bell metal. (P.G.)	25. Kāmsyakāra	Workers of common alloys and bell metal and casters of bells.
Barhi or Yang Karmi	..	..	Confectioners. (P.G.)	19. Dārūkara	Wood-worker.
Lohangkami	..	..	Wheel-wrights and makers of spinning-wheels. Brahman or Bandya according to creed.		
	..	..	Stone masons and carvers of stone images. (P.G.)		

Hodgson's List.		Lévi's List.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
Dhanwantar or Baidya	Physicians, to give last unction but not medicine.	..	..
Kisani or Jyapoo	Agriculturists, but not to use the plough. They act as carriers of Puja apparatus and throw away the sacrificial remains after the Bali has been performed and is over. (P.G.)	Jyapu (Not given in list. See discussion).	Cultivator.
Tamot or Tama ..	Braziers, workers in copper and zinc and also gold-platers. Priests are Brahmans, Jaisis or Achars. If Buddhist, priest is a Gubha.	27. Tamrakāra ..	Brazier.
Tatti ..	To make dresses for the idols and caste thread or janeo. (P.Br.)	24. Karnika ..	Weaver (?).
Udas ..	Traders, home and foreign. (P.G.)	..	..
Kumhal ..	Potter. Priest is an Achar.	22. Kumbhakāra ..	Potters.
Gwā or Gwālla ..	Cowherd and milkman. (P.Br.)	28. Gopāla ..	Cowherds.
Sikami ..	Carpenter. (P.G.)	20. Takṣaka ..	Carpenter.

Swarnakar or Loon-karmi.	Gold and silversmiths. (P.G.) Barbers are of the Kassai caste (=B.K.).	26. Suvarnakāra	..	Goldsmith.
Khooso or Khoosal	To play the Kāhā before funerals and to help the Salmi at scaffolding in certain Pujas.	..	..	..
Kepoj or Tāpē	To grow or sell palong (a kind of green herb eaten at table), and to play on the Kāhā before funerals (P.G.) (B.K.). Allowed to cultivate fields.	..	..	..
Mosānta or Moosah	Packers of meat in butcher's shop. Few or none exist now	..	..	..
Salmi	Pressers and sellers of oil. They have to make the scaffolding for repairing and building temples (P.G.) (B.K.)	..	..	..
Chitrakar	Painters; to draw pictures of gods and goddesses and colour them. Also, to make and sell spirituous liquors. (P.G.) (B.K.). They should not cultivate, but do so at present. At present Hajjams shave and pare their finger nails, while the Kassais cut the toe nails.	30. Chitrakāra	..	Painter.
Bha or Mahabrahman	They take the death gifts on the 11th day and eat a bit of the corpse. They dye woollens and	..	..	..

HODGSON'S LIST.		LÉVI'S LIST.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
Kohnal or Koonah ..	cotton with red colour. They should not cultivate or keep shop, but do both now (P.G.) (B.K.).	..	..
Nau or No ..	Makers of religious pastilles. Should not cultivate.	17. Napita ..	Barber and Chirurgeon, as well as go-between.
Porya ..	Barbers, serving the higher castes, from Brahman down to Jyapooos. They are their own barbers.	Podhyas (not given in list itself. See discussions).	Executioners, killers of dogs, night-soil removers, etc.
Kutchi (Chamar) ..	They shall guard the temples and live by what worshippers give them, and also by fishing, catching wild birds and breeding hogs. They are untouchables and appropriate clothes, etc., belonging to corpses, getting also a fee at funerals.	47. Matangi ..	} Leather worker and tanners.
	Their vocation shall be to make leathern vessels, bags, and to work in general in leather. If they take to any other craft, they will be heavily fined.	43. Charmakāra ..	
		15. Śilpikāra ..	Artisan.

Sanghat	..	11. Bhārika	..	Porter (?)
Pichini	..	18. Lepika ..	..	Plasterer.
Kou or Nah Karmi	..	21. Kṣetrakāra	..	Land surveyor.
Pool Pool	..	23. Tulādhara	..	Weigher (weighing officer). (K.P.C.)
Chipa	..	29. Gāyana	..	Singer.
Māli	..	31. Naṭjīva	..	Actors who prostitute their wives.
	..	32. Vyāñjanakāra	..	Cooks (?)
	..	33. Kirāta	..	Hunters (?)
	..	38. Kundakāra	..	Ivory turner.
	..	40. Dhobi	..	Washerman.
	..	41. Rajaka ..	..	Dyer and cleaner.
	..	32. Nadichedi	..	Cutter of umbilical cord (?)
	..	39. Loha Kāra	..	Smith; ironworker.
	..	..	..	..
	..	..	..	..
	..	33. Māli	..	Gardener.

Hodgson's List.		Lévi's List.	
Name of Caste.	Occupation and Description.	Name of Caste.	Occupation and Description.
Gāthā ..	Gather and sell wild flowers (P.G.) (B.K.).	..	..
Sawāl ..	Apply leeches for bleeding (P.G.).	..	..
Nāri ..	House painters (P.G.) (B.K.).	..	..
Kassai or Gai ..	Butchers; castemen are barbers. Priests are Gnai-Gubhas (of the Khoosas). They cannot cultivate fields.	34. Mānsavikrayī ..	Butcher.
Tatti ..	Weaver of grave clothes (P.G.) (B.K.).	36. Tantukāra ..	Weaver (?)
Next follow the outcastes who act as their own barbers: caste elders are generally their priests. The Bhat does not accept their aims.		..	..
Koosoolia ..	To play music at marriages, funerals, etc., to beg and serve as sweepers.	..	..
Dop, Dom or Bhand ..	To play on the small drum with the Koosoolia and to prostitute their wives, for livelihood.	..	..

